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THESIS

**POST-COLD WAR PERSTEMPO POLICIES AND
CHALLENGES: AN EXAMINATION OF THE BASELINE
ENGAGEMENT FORCE ASSESSMENT AND MODEL**

by

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August 1998

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AN EXAMINATION OF THE BASELINE ENGAGEMENT FORCE
ASSESSMENT AND MODEL**

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Lieutenant, United States Navy
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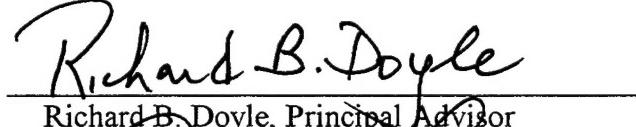
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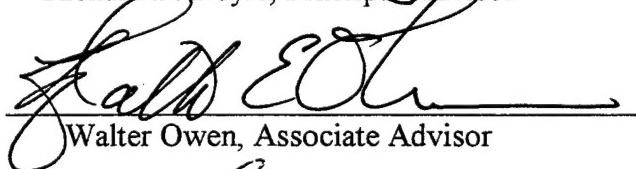
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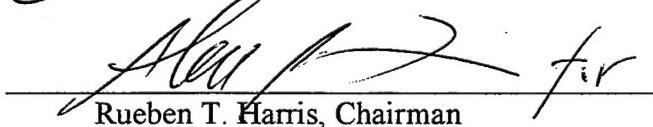
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ABSTRACT

This thesis addresses policy and analytical challenges associated with the post-Cold War personnel tempo (PERSTEMPO). It examines a study conducted by the Joint Staff called the Baseline Engagement Force (BEF) Assessment. The majority of the data were obtained from the Force Structure, Resources, and Assessment Directorate (J-8) of the Joint Staff. The BEF Assessment determined the level of military effort required to support peacetime engagement demands and revealed that PERSTEMPO reporting among the Services is diverse in that reporting and tracking methods and concepts differ. Misunderstanding of reporting and tracking methods and concepts led to under-reporting of PERSTEMPO. Errors, by a factor of ten, consistently occurred when reporting PERSTEMPO to the Secretary of Defense and the Chairman of the Joint Chiefs of Staff. Another finding was that the current PERSTEMPO is placing heavy demands on the deployable pool, rather than the end strength. PERSTEMPO increases by twelve percent when the deployable pool is placed in the denominator when calculating deployment percentages. The Assessment also revealed that there is no tool for the Services to conduct real time assessments of PERSTEMPO. To make these assessments, a Baseline Engagement Force Model was developed by the RAND Corporation and the Systems Research and Applications (SRA) Corporation for the Joint Staff. This Model was designed to produce alternatives for reducing the impact of deployments on military members and to help determine policy regarding the capabilities of the unit deployment and personnel management process.

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I. INTRODUCTION

The committee believes that the limitations of the balanced budget agreement and the continual, demanding requirements of increasingly frequent contingency deployments have stretched our military forces to the breaking point.

Committee on Armed Services
U.S. Senate¹

In a post-Cold War environment, can the United States military indisputably meet and unequivocally support all peacekeeping and smaller-scale contingency (SSC) demands without compromising the All-Volunteer Force concept? If so, in accomplishing these demands, is the United States military spread too thin?

One expert on U.S. military policy observed that "the eagerness of this Administration to cut personnel and spending while refusing to cut military commitments has left the military intolerably thin. Not only is the force level too small for many missions, but the budget will not support even this inadequate force" (Hillen, 1998, p. 39).

It can be argued that America is involved in too many peacekeeping missions and smaller-scale contingency operations. Furthermore, it can be argued that these demands are producing a negative effect on the readiness and performance of our warriors for fighting and winning future major theater wars (MTWs).

¹ Quoted from Senate Committee Overview and Recommendations on the Department of Defense Authorization Act for Fiscal Year 1999. Report 105-189.

A. NATIONAL SECURITY ENVIRONMENT

The Preamble to the Constitution of the United States directs our Government to:

. . . provide for the common defence, promote the general Welfare, and secure the Blessings of Liberty to ourselves and our Posterity. . . .
(Commager and Cantor, 1988, p. 139)

Without engagement and leadership by the United States in the area of peacekeeping missions and smaller-scale contingency operations, we could see a possible escalation of dangers that threaten our welfare, liberty, posterity, sovereignty, and values. Dangers such as civil war, armed insurgency, ethnic and religious conflicts, guerilla activity, separatist movements, border tensions, and political unrest characterize the contemporary international security environment.

Fostering a more stable and peaceful world within this environment requires the U.S. military to develop the capability to conduct peacekeeping and smaller-scale contingency operations. These operations are important for our National Security, but there are trade-offs. Increasing foreign missions for National Security, along with decreasing personnel and defense dollars, can have negative effects on personnel, maintenance, training, and overall readiness.

The 100 billion dollars that has been slashed from the U.S. defense budget over the past nine years may be too large of a cut. The Speaker of the U.S. House of Representatives commented in 1998 that defense spending should increase because "our forces are not getting sufficient training and the other support necessary for them to defend America or our interests around the globe" (Gingrich, 1998, p. 44).

A document prepared in December of 1997 by a senior Senate Budget Committee analyst states that the National Training Center for the Army has had units rotating in with significant (fifty to sixty percent) shortages in mechanics personnel and infantry personnel (Roos, 1998). The document also states that "these shortages were described as due to personnel being deployed abroad for missions such as Bosnia" (Roos, 1998, p. 18). Furthermore, the document asserts that the increase in time away from home that Army soldiers have experienced is due to peacekeeping missions (Roos, 1998).

B. THESIS FOCUS

The focus of this thesis centers on peacekeeping missions and smaller-scale contingency operations, and the effect they have on personnel tempo (PERSTEMPO) and the All-Volunteer Force.

Due to the reduction in force size, along with the increase in peacetime engagements, the deployable force has been spending up to fifty percent of their nights away from home port and home bunk (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997). Fifty percent may be too high of a number in trying to convince military members to stay in the service, or furthermore, that a career in the military is a propitious option. This high PERSTEMPO may be one of the major factors why "the Navy has missed its retention goals four years running," or why "some ships are undermanned by as much as twenty-five percent, especially in key areas" (Hillen, 1998, p. 39).

The *Report of the Quadrennial Defense Review* (QDR) notes that “if not adequately managed, the demand for peacetime operations, coupled with a smaller force, could overstress personnel operating tempo and take its toll on the quality of life of military personnel that is the foundation of long-term readiness” (1997, p. 37). Consequently, a high PERSTEMPO could endanger the All-Volunteer Force concept.

While PERSTEMPO is only one of the many factors that influence the quality of life for military members and the career choices they make, it is a topic that has not been seriously looked at until the *Report of the Quadrennial Defense Review* and the Baseline Engagement Force Assessment.

This thesis investigates efforts that are underway to define, measure, and better express the demands that have been and will be placed on the All-Volunteer Force. Is something needed to better control these demands? How can senior leadership measure these demands? If the All-Volunteer Force concept is to remain in place, military leadership needs to carefully assess the role and extent that the military will play in peacetime engagement activities.

C. OVERVIEW

Chapter II discusses the President’s *National Security Strategy*, the Chairman of the Joint Chiefs of Staff’s (CJCS) *National Military Strategy*, and the Department of Defense strategic personnel management goals. These three topics set the stage for explaining why the U.S. military is engaged in so many missions and why PERSTEMPO is at such a high level.

Chapter III discusses the Baseline Engagement Force Assessment. This was an assessment conducted in 1997 by the Force Structure, Resources, and Assessment Directorate (J-8) of the Joint Staff. It was developed to gain quantifiable insights on the level of effort required to support peacetime engagement and enlargement with an All-Volunteer Force.

Chapter IV discusses the Baseline Engagement Force Model. This is a personnel inventory and unit deployment model developed by the RAND Corporation and the Systems Research and Applications (SRA) Corporation for the Joint Staff. The model was derived from a *Quadrennial Defense Review* requirement.

Chapter V concludes with a summary of lessons learned. It also provides recommendations for further research and commentary on the All-Volunteer Force of the future.

II. U.S. FORCES AND THE SECURITY ENVIRONMENT

The focus of this chapter provides background information on the peacetime engagement demands on the All-Volunteer Force. It begins by providing information on U.S. challenges, opportunities, and the uncertain future that lies ahead with respect to the President's *National Security Strategy* and the *National Military Strategy*. An assessment of U.S. military forces and the demands that face them follows. The chapter concludes by discussing Department of Defense strategic personnel management planning goals.

A. NATIONAL SECURITY STRATEGY AND NATIONAL MILITARY STRATEGY

While the threat of nuclear holocaust has been significantly reduced, the world remains a very unsettled and dangerous place. Hostile regimes and instability threaten U.S. interests in key regions. America must remain actively engaged in this complex global environment.

William S. Cohen²
Secretary of Defense

1. Change, Challenges, and Opportunities

During the Cold War years, the United States military trained primarily to fight and win major theater wars (MTW). The United States pursued a strategy of containing the Soviet Union and the seven “satellite” nations in Eastern Europe who signed the

² Quoted in Defense 97, from a statement to the House National Security Committee, February 1997, p. 4.

Treaty of Friendship and Mutual Assistance in Warsaw on May 15, 1955. Led by men like First Secretary Josef Stalin, First Secretary Nikita Khrushchev, and Admiral Gorshkov, the Warsaw Pact pursued the development of a modern and innovative fleet. By 1986, the Soviets had amassed a Navy that Secretary of the Navy John F. Lehman described as follows:

What is particularly disturbing about the “fleet that Gorshkov built” is that improvements in its individual unit capabilities have taken place across broad areas. Submarines are faster, quieter, and have better sensors and self-protection. Surface ships carry new generations of missiles and radars. Aircraft have greater endurance and payloads. And the people who operate this Soviet concept of a balanced fleet are ever better trained and confident (Polmar, 1988, p. i).

Defeating the Warsaw Pact was the most demanding national security challenge the United States faced since World War II. It dominated strategy, force planning, and defense budgets for nearly half a century. Yet, after 40 years of continuous military, economic, moral, and technological superiority, we were able to defeat the Communist threat. When the Cold War ended, everything changed.

In 1991, the Commander of the U.S. Sixth Fleet, Admiral William A. Owens, stated:

The former Soviet aircraft carrier Kuznetsov was the manifestation of what we had prepared for and trained against for decades – Soviet blue-water, sea-control naval power. Now, in the summer of 1991, she had entered the Mediterranean. But she had not come to challenge the Sixth Fleet. She had left the Black Sea because there no longer was a Soviet Union or a Soviet Black Sea Fleet. As we tracked her through the Mediterranean, I had a poignant feeling of how much the world had changed, and, as she neared the Atlantic, I radioed her captain, Sergei Chekhov, wishing him “fair winds and following seas” for the voyage home. He replied that he no longer knew where home was (Owens, 1995, p. 2).

As the world watched the Soviet Union crumble and the Warsaw Pact dissolve in the early 1990s, many assumed that the U.S. military no longer had a mission. Others thought the bipolar world that had been dominated by the two superpowers (U.S. and U.S.S.R.), would be replaced by a multipolar world. Still others claimed that the United States would be the only superpower, and conflict among nations would become obsolete.

Despite the end of the Cold War, it is clear that international conflict is not obsolete. As the Chairman of the House National Security Committee pointed out in 1998, "rogue states like North Korea, Iran, and Iraq—no longer restrained by a bipolar superpower balance of power, and increasingly desperate due to their isolation and growing internal economic and political problems—are perhaps more threatening to their neighbors and to U.S. interests than they were during the Cold War" (U.S. Congress, House, February 12, 1998, p. 2).

In many ways, the task of achieving national security goals is more complex than it was during the Cold War. New, smaller, less predictable, and more difficult to analyze threats and dangers have surfaced that challenge and will continue to challenge our

military and political skills. Not only do we have military challenges external to the United States, but we have a serious readiness problem. This problem, involving balancing readiness, quality of life, declining budgets, manning, and operational tempo (OPTEMPO) issues while continuing to execute a broad range of global missions, needs to be managed prudently.

2. Uncertain Future

Between now and 2015, it is reasonable to assume that more than one aspiring regional power will have both the desire and the means to challenge U.S. interests militarily (U.S. Department of Defense, Office of the Secretary of Defense, 1997, p. 3).

As of March of 1998, there were 53 countries around the world with unresolved armed conflicts (Defense and Foreign Affairs Group, 1998). Appendix A lists these countries and their conflicts. Civil war, armed insurgency, ethnic and religious conflicts, guerilla activity, separatist movements, border tensions, and political unrest are prevalent among these 53 countries. Another source lists 21 more places where conflicts may restart (The Defense Monitor, 1998).

The Secretary of Defense points out that "as the 21st century approaches, the United States faces a dynamic and uncertain security environment" (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. 1). In order for our Nation to shape and respond to the threats and dangers that have surfaced around the world, our military must remain actively engaged, often far beyond our shores. We must retain superior military capabilities so that we can quickly respond, with other nations or alone.

Togo D. West, Jr., former Secretary of the Army, points out that at one time, many armed conflicts were restrained by the pressures of a bipolar global competition. Now these conflicts are erupting because many Cold War constraints have dissolved (U.S. Department of Defense, Office of the Secretary of Defense, 1996). Furthermore, the Chairman of the House National Security Committee stated that these conflicts have "been a constant feature of the post-Cold War world, and U.S. troops have been sent on more than one occasion to respond to what the Pentagon refers to as 'smaller-scale contingencies'" (U.S. Congress, House, February 12, 1998, p. 3).

Other than fighting and winning wars, the U.S. military has many jobs. Department of Defense operations, including peacekeeping, humanitarian assistance, and smaller-scale contingency operations, involve anywhere from 35,000 to 40,000 people at any time (U.S. Department of Defense, Office of the Secretary of Defense, 1998). As a result, the U.S. military is a very active organization. "On any given day, the Total Force is deployed in support of 10 Joint/Combined Operations and participates in 11 exercises in over 70 countries" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1997, p. 13).

3. Shape, Respond, Prepare Now

Guided by the President's 1997 *National Security Strategy* and the Secretary of Defense's *Report of the Quadrennial Defense Review*, the Chairman of the Joint Chiefs of Staff, in collaboration with the Joint Chiefs of Staff and the Combatant Commanders, formulated the 1997 *National Military Strategy*. The *National Military Strategy* is a

document that provides "the strategic direction of the Armed Forces over the next three to five years" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1997, p. 1).

Both the 1997 *National Security Strategy* and the *Report of the Quadrennial Defense Review* call for an integrated strategic approach to defeating threats to U.S. interests. Correspondingly, the *National Military Strategy* is built on this integrated strategic approach.

The first goal of this integrated approach is to *shape* the international environment in ways that enhance U.S. security interests. Shaping the international environment includes overseas presence, smaller-scale contingency operations, international operations and exercises, and peacekeeping operations.

Our military forces must be ready and trained to fulfill these roles and be ready to fight and win two major theater wars almost simultaneously and alone. Our National Security Strategy points out that "it is imperative that the United States, now and for the foreseeable future, be able to deter and defeat large-scale, cross-border aggression in two distant theaters in overlapping time frames" (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. 8).

Table 2.1 is a list of overseas presence commitments. These forces play an integral role in shaping the international environment.

Table 2-1: Overseas Presence Commitments

Service	Commitment
Army	The Army will maintain major portions of two heavy divisions in Europe and one mechanized division in the Pacific region.
Navy	The Navy will maintain one carrier battle group and one amphibious ready group in European waters, one carrier battle group and one amphibious ready group in the Pacific, and one carrier battle group and one amphibious ready group in the Indian Ocean/Arabian Gulf for portions of each year, as specified in the Global Naval Forces Policy.
Air Force	The Air Force will maintain two fighter wing-equivalents in Europe, two fighter wing-equivalents in the Asian/Pacific region, and one fighter wing-equivalent in Southwest Asia.
Marine Corps	The Marine Corps will maintain one Marine expeditionary force in the Asian/Pacific region, in addition to those forces routinely deployed with amphibious ready groups.
Beyond the presence requirements listed above, forces from all four Services carry out periodic deployments in forward locations, as needs arise.	

Source: U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. J-3.

The second goal of the *National Military Strategy* is to **respond** across the full spectrum of crises. This encompasses everything from peacekeeping operations, to smaller-scale contingency operations, to major theater wars. The Department of Defense must be very careful when deciding where and how to respond to crises. "Responding to multiple concurrent contingencies requires careful consideration to ensure our forces are not dissipated and therefore either unable, or perceived as unable, to respond to more critical threats" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1997, p. 15).

An example of this problem arose in February, 1998, in the Persian Gulf. Along with the USS *George Washington* operating in the Gulf, the USS *Nimitz* was relieved by the USS *Independence*. This was not in long term planning. The *Independence* had been cruising around the Asian Pacific for her final voyage before being decommissioned in September of 1998. This cruise was to be somewhat of a 'victory lap' for her almost 40 years of Naval service to America. However, the *Independence* was detoured for the massive buildup of sea and air forces in the Arabian Gulf region. All other U.S. aircraft carriers were committed in other theaters (Graham, 1998).

The Chief of Naval Operations, Admiral Jay L. Johnson, summed up the situation when he stated that "if we have a two-carrier presence in the gulf, it means we have a zero presence somewhere else. That's considered within the bounds of acceptable risks. But there is an operational price to pay in other theaters" (Graham, 1998, p. A6).

Along that same line, the USS *John C. Stennis* was scheduled to participate in a major NATO exercise (Exercise Strong Resolve) off the coasts of Norway and Spain

from March 9th to March 21st 1998. Exercise Strong Resolve was long planned to be "the largest NATO war game since the end of the Cold War" (Dorsey, 1998, p. A6). As the exercise date neared, it was determined that *Stennis* would not be able to participate because she had to relieve the USS *George Washington* in the Persian Gulf.

The Chief of Naval Operations stated that "the purpose of the U.S. Navy is to influence directly and decisively events ashore from the sea – anytime, anywhere" (Johnson, 1997, p. 8). If not carefully managed, we may over-stretch our "response across the full spectrum of crises" and commit our military such that we cannot participate "anywhere" at "anytime".

The third and final goal of the integrated approach is to *prepare now* for the uncertain future that lies ahead of us. While the first two goals are 'near term' in nature, this goal incorporates our ability to "shape and respond effectively in the face of future challenges" (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. 9). In order for this to occur, and in order for us to maintain the most formidable force in the next century, leaders need to carefully manage and balance defense dollars that go towards quality of life, recruiting, equipment modernization, and infrastructure programs. The future challenge is to balance those programs, along with endstrength and personnel tempo issues, such that readiness for the All-Volunteer Force is not compromised. The success of the *prepare now* approach "demands a stabilized investment program . . . it also requires fundamental reengineering of our infrastructure and streamlining of our support structures" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1997, p. 17).

The reengineering and streamlining of defense resources and capabilities was carefully addressed in the *Report of the Quadrennial Defense Review*. Nevertheless, the Senate Armed Services committee pointed out that they "are concerned that the armed forces, even if enhanced with the capabilities envisioned in the QDR, may not be able to execute the strategy [ability to win two concurrent major regional contingencies] without excessive risks and casualties" (U.S. Congress, Senate, FY 1999). In order to avoid these risks and casualties for our 21st century, high quality All-Volunteer Force, leaders must *prepare now* so we can cautiously prioritize our resources and addresses future problems that go beyond the need for simply more defense money.

Senate Majority Leader Trent Lott succinctly addressed the issue of additional funds by stating that "while I believe that more money needs to be allocated to our National Defense, it needs to be done prudently. We need to get the missions, manning, equipping, and pay and benefits synchronized to enable us to continue with a quality force into the 21st century" (U.S. Congress, Senate, 1998).

4. Overseas Presence

Permanently stationed and rotationally or temporarily deployed forces promote security and stability, prevent conflict, give substance to our security commitments, and ensure our continued success (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1997, p. 19).

Overseas presence determines to a large extent the overall shape and size of U.S. forces. During fiscal year 1998, out of the 1.45 million men and women in the U.S.

military, about 200,000 were stationed overseas. U.S. forces stationed and deploying overseas provide regional stability, support allies, and amplify deterrence.

U.S. forces also sustain credible military presence in several critical regions that shape the international security environment in favorable ways. For example, in the spring of 1998, "as United Nations Secretary General Koffi Annan recognized, the influence of our overwhelming military presence in the Arabian Gulf region was a decisive factor in convincing Saddam Hussein to come to terms in the latest crisis over United Nations weapons inspectors" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1998, p. 2).

In each of the regions listed in this section, the Department of Defense takes an active role in protecting U.S. national security interests. This active role can take any of the forms indicated in Table 2.2.

a) Europe and Eurasia

Our leadership ensures U.S. forces work closely with NATO forces for promoting security and stability throughout the European continent. From countering drug trafficking and terrorism, to smaller-scale contingency operations, to the proliferation of NBC weapons and delivery systems, U.S. forces are active in Europe. As the Chairman of the House National Security Committee states, this is displayed in Bosnia where our troops have "become a large-scale commitment that promises to be the central mission for U.S. forces in Europe for years to come" (U.S. Congress, House, February 12, 1998, p. 3).

Table 2.2: U.S. Overseas Presence in Several Forms

Permanently stationed forces	Humanitarian demining
Periodic and temporary deployment of forces	Prepositioning of military equipment and supplies
Combined exercises	Nation assistance
Port call and other force visits	Foreign military interactions
Security assistance offices	Defense attaches

Source: U.S. Department of Defense, Office of the Secretary of Defense, 1996, p. 12.

There are approximately 100,000 U.S. men and women stationed in Europe, not including a continuous presence of U.S. Naval and Marine Corps forces in the Mediterranean Sea. Maintaining this level of U.S. forces in Europe is essential for preserving U.S. influence and leadership in NATO, providing a visible deterrent, and maintaining overall security and stability in that region (U.S. President, 1997).

U.S. military presence in this region consists of two Army divisions, two Air Force fighter wing-equivalents, a Marine expeditionary force, and a Navy carrier battle group and amphibious squadron.

b) East Asia and the Pacific

We have significant interests in Japan, the Korean Peninsula, and China. In order for the U.S. to play the role as "security guarantor and regional balancer" (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. 12), the Department of Defense is committed to maintaining a level of approximately 100,000 troops in this region. This includes an Army division, two and a half Air Force fighter wing-equivalents, a Marine expeditionary force, and a Navy carrier battle group and amphibious squadron.

c) Middle East and Southwest Asia

U.S. forces in the Indian Ocean and Persian Gulf will continue to confront a variety of dangers from Iraq and Iran as these countries pose threats to their neighbors. In July of 1998, U.S. and Israeli officials confirmed that Iran tested a medium-range missile with an estimated range of 800 miles. Although this test was not successful, a missile such as the one tested could give Iran the capability of striking Israel or U.S. troops in the Persian Gulf region (King, et al., 1998).

With Israel being the only nuclear power in the region, and its missiles capable of striking almost any Middle East country, Iran has been pressing to get a medium-range missile in operation. There have been estimates that show "Iran will have a medium-range missile capable of hitting Saudi Arabia and Israel in as little as 10 years" (King, et al., 1998, p. 1).

After the 1998 missile test, Iran was not the only country the U.S. was concerned with. "The White House condemned the test as 'antithetical' to the security of the region and criticized North Korea for selling missiles to Iran" (King, et al., 1998, p. 1).

U.S. overseas commitments in this region consist of an Air Force fighter wing-equivalent, a Marine expeditionary force, and a Navy carrier battle group and amphibious squadron. With nearly half our oil needs coming from imports, and a majority of these imports coming from the Persian Gulf region, it is unlikely that U.S. military commitment in this region will be reduced.

5. Strategy Implementation

Those who expect to reap the blessings of freedom must undergo the fatigue of supporting it.

Thomas Paine³
1777

In an effort to implement a strategy for keeping America safer and more prosperous, the President's *National Security Strategy* lays out six strategic priorities. Four of these strategic priorities, directly related to the military, are explained below.

One of the President's strategic priorities is to "foster an undivided, democratic and peaceful Europe" (U.S. President, 1997, p. 2). With over 100,000 U.S. troops in Europe (see Table 2.3), the military plays a substantial role in supporting this priority.

³ Quoted in "Report of the National Defense Panel", December 1997, p. 3.

While progress has been made with NATO in strengthening Europe's west, there is considerable interest in developing military alliances with Europe's east.

Table 2.3: Shaping the International Environment in Europe

Air Force	Two fighter wing-equivalents
Army	One armored division and one mechanized infantry division
Marine Corps	A Marine expeditionary unit
Navy	One carrier battle group and one amphibious ready group

Source: U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. 23).

The Army alone has put over 11,000 active and reserve component soldiers and civilians in Bosnia (U.S. Department of Defense, Office of the Secretary of Defense, 1998). This demonstration of U.S. support to NATO allies enhances conditions necessary to implement the Dayton Peace Accords and foster a peaceful Europe.

A second strategic priority is to "forge a strong and stable Asia Pacific community" (U.S. President, 1997, p. 2). With a vast array of forces (see Table 2.4) and over 100,000 U.S. men and women, the military proceeds with a robust forward presence policy in the Asia Pacific community.

Table 2.4: Shaping the International Environment in Asia and the Pacific

Air Force	Four fighter wing-equivalents
Army	One mechanized division and one light infantry division
Marine Corps	Two Marine expeditionary units
Navy	Two carrier battle groups and two amphibious ready groups

Source: U.S. Department of Defense, Office of the Secretary of Defense, 1998, pp. 23 and 24).

A third strategic priority is to "continue America's leadership as the world's most important force for peace" (U.S. President, 1997, p. 2). Along with approximately 200,000 military personnel who are permanently stationed in Europe and the Pacific, there is a "a strong rotational presence of about 25,000 personnel in Southwest Asia and 15,000 in the Caribbean Basin-Latin America region" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1998, p. 3). Every month, about 43,000 U.S. troops are committed to peacekeeping efforts, various smaller-scale contingencies, and humanitarian efforts around the world.

A fourth and final strategic priority from the President, that will be discussed in this thesis, is to "strengthen the military and diplomatic tools necessary to meet these

challenges" (U.S. President, 1997, p. 2). The military must be able and ready to defend our country and our way of life. President Clinton emphasizes that in order for this to happen, we must first take care of the men and women of our U.S. forces (U.S. President, 1997). The next section of this chapter will address this issue.

B. FORCE ASSESSMENT

There is clear evidence that the combat readiness of the armed forces is at greater risk due to two key factors: older and harder-to-maintain equipment resulting from inadequate modernization and the overuse of a smaller force structure.

Committee on Armed Services
U.S. Senate⁴

1. Size of U.S. Forces and the Defense Budget

The Department of Defense budget has been declining, measured in constant dollars, over the past fourteen years. In 1985, the Defense budget was \$400 billion (in constant, fiscal year 1997 dollars) which constituted 28 percent of our national budget. In 1997, the Defense budget was \$250 billion and constituted 15 percent of our national budget.

Military manpower has also been declining. In 1985, the Department of Defense had over 2.2 million men and women in uniform. In 1997, the U.S. had about 1.45 million men and women in uniform.

⁴ Quoted from Senate Committee Overview and Recommendations on the Department of Defense Authorization Act for Fiscal Year 1999. Report 105-189.

The *Report of the Quadrennial Defense Review* states that "in making these reductions, we have carefully protected the readiness of our military to carry out its currently assigned missions" (U.S. Department of Defense, Office of the Secretary of Defense, 1997). However, the cutbacks do not stop at fiscal year 1997.

The outlook for the fiscal year 1999 Defense budget is approximately 4.5 percent less than the fiscal year 1997 budget (U.S. Department of Defense, Office of the Secretary of Defense, 1998) and represents "the lowest level of inflation-adjusted defense spending since before the Korean War" (U.S. Congress, House, May 21, 1998, p. 1). Additionally, the *Report of the Quadrennial Defense Review* highlights that the number of active duty military personnel will be reduced to 1.36 million men and women---a drop of thirty-six percent from fiscal year 1989 and a drop of more than six percent from fiscal year 1997 (U.S. Department of Defense, Office of the Secretary of Defense, 1997).

While the Department of Defense is taking a considerable interest in protecting readiness and quality of life issues, with dwindling defense budgets and shrinking end strength, it is getting tougher each year. In the spring of 1998, the Joint Chiefs of Staff testified to Congress that the fiscal year 1999 budget for the military "contained shortfalls of more than 10 billion dollars, and shortfalls of more than 58 billion dollars over the next five years" (U.S. Congress, House, May 21, 1998).

There is a growing concern for quality of life, readiness, and modernization shortfalls. If defense budgets continue to shrink, it will become more difficult for the Department of Defense to make improvements for the All-Volunteer Force in these

already difficult areas. As the Chairman of the House National Security Committee stated,

I do not understand how any of us can expect the military services to stabilize their smaller QDR force structure, protect quality of life and readiness and begin to end the decade-long procurement holiday when we are dealing with budgets that are tens of billions of dollars short of keeping pace with inflation. Quality of life, readiness and modernization are all suffering and there is no end in sight to the fourteen year trend of declining defense budgets. The "robbing Peter to pay Paul" metaphor simply does not work any longer. As far as I am concerned, Peter and Paul are both getting robbed blind (U.S. Congress, House, March 12, 1998, p. 2)

Increasing foreign missions for National Security, along with decreasing personnel and defense dollars, can have negative effects on personnel, maintenance, training, and overall readiness. The decision to cut U.S. personnel and the military budget has been carefully assessed. Nonetheless, the turbulence and possible future unforeseen problems that are difficult to measure (i.e., readiness) have not been assessed so clearly.

2. The All-Volunteer Force

In 1973, the first time since before World War II, the Department of Defense instituted the All-Volunteer Force. Now, a quarter of a century later, the All-Volunteer Force has survived the Cold War, a post-Cold War draw down, several peacekeeping and smaller-scale contingency operations, and a major conflict (Desert Storm). Today's All-Volunteer Force is engaged in the wide range of missions that have increasingly come to characterize the post-Cold War. While the All-Volunteer Force concept has worked

relatively well since 1973, fewer dollars and troops and more missions may be endangering it.

In March of 1998, the Chairman of the House National Security Committee opened a hearing with the two Regional Commanders-In-Chief. They were General Wesley K. Clark, commander-in-chief of U.S. European Command, and General Anthony C. Zinni, commander-in-chief of U.S. Central Command. The Chairman stated:

General Clark, General Zinni, you help to lead the most capable military the world has ever seen, but the risk to the viability of our forces grows everyday. I hope you will address the issue of how much risk is too much? And how much longer we can ask the troops you command to do more with less? (U.S. Congress, House, March 5, 1998, p. 1)

It has become exceedingly difficult for the Department of Defense to maintain the All-Volunteer Force. However, with proper management and leadership, maintaining the All-Volunteer Force is far from impossible. The next section will highlight some of the management and leadership practices and goals that characterizes the Department of Defense's interest in preserving the All-Volunteer Force.

C. STRATEGIC PLANNING: DOD GOALS

We have had three different reviews of our national strategy since the end of the Cold War, and the end result of all these reviews has been to reduce the size of the force to where it is now, its lowest level since before the Korean War. These reductions have not been balanced out with a similar reduction in the number of missions and deployments.

Senate Majority Leader Trent Lott
Letter to the U.S. President
June 26, 1998

According to the Government Performance and Results Act of 1993 (GPRA), all cabinet departments are required "to engage in a cycle of strategic planning, performance planning, and evaluation of achievements against the performance plan" (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. J-1).

The strategic plan for the Department of Defense is outlined in the *Report of the Quadrennial Defense Review*. This document was derived from the President's *National Security Strategy*. After the *Report of the Quadrennial Defense Review* was completed, the Department of Defense produced six corporate-level goals. A performance plan that assesses the level of achievement for each of the six goals was submitted to Congress with the fiscal year 1999 budget. A performance report (assessment of performance on each of the six goals) is to be provided to Congress by March 2000. The process of strategic planning, performance planning, and evaluation, will become a recurring cycle that must be updated by each cabinet department at least every three years (U.S. Department of Defense, Office of the Secretary of Defense, 1998).

Goal Five, "Maintain highly ready joint forces to perform the full spectrum of military activities," (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. J-6), incorporates deployment and personnel management issues. These issues are easily seen but not easily measured due to the complex metrics involved in assessing them.

Outlined below, are three of the four distinct elements of Goal Five for the Department of Defense's first GPRA performance plan.

1. Maintain High Personnel and Unit Readiness

Readiness is defined as "the ability of forces, units, weapon systems, or equipment to deliver the outputs for which they were designed (includes the ability to deploy and employ without unacceptable delays)" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1994, p. 237).

The Department of Defense measures readiness using the Status of Resources and Training System (SORTS). Within SORTS, there are five levels of readiness. Each level takes into account "personnel readiness, manning levels, the amount of equipment issued to a unit and the state of the equipment's maintenance, and the state of the unit's training" (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. J-6).

C-1 is the highest level of readiness and C-5 is the lowest level of readiness. C-3 is the lowest level of readiness that is acceptable for an active duty unit. A unit with a rating of C-3 would not only require additional training, but most likely would also need additional equipment and personnel in order for the unit to deploy and carry out its mission effectively.

The United States General Accounting Office states that SORTS does not take into account some critical readiness factors such as operating tempo and personnel morale (U.S. General Accounting Office, 1996). The report states that "in contrast to SORTS data, our visits to high-deploying units and discussions with officials in major commands revealed pronounced concerns about personnel problems such as divorces, missed family events and holidays, and lowered retention" (U.S. General Accounting Office, 1996, p. 3). A 1996 GAO report points out that while actions are underway to address operating

tempo, the Services do not have "goals or polices to limit PERSTEMPO"---there are "no clear regulations on this issue" (U.S. General Accounting Office, 1996, p. 3).

Since 1996, this has changed. Each Service now has guidelines that limit PERSTEMPO. What has not changed is the inability to measure stress on the force. Chapter IV will address this issue.

2. Recruit and Retain Well-Qualified Military and Civilian Personnel

I am very concerned about the growing inability of our country to man the uniformed services. Not only is there difficulty in recruiting, but also in our ability to retain key personnel.

Senate Majority Leader Trent Lott
Letter to the U.S. President
June 26, 1998

Recruiting and retention are important factors for maintaining and keeping a high-quality, ready All-Volunteer Force. As Chapter III will point out, it is not the total force that carries most of the PERSTEMPO burden, but those forces who are the regular deployers--those who have the skills and training that is needed for peacekeeping and smaller-scale contingency operations. It is these men and women--who patrol Bosnia, the Persian Gulf, the no-fly zones, Somalia, and Haiti---who are most likely to leave the military (Roos, 1998).

The troops that leave the military can be replaced, but it is not an easy task---from a financial and readiness standpoint. At the mid-point of his or her career, the Air Force has invested approximately \$4 million into training a pilot (Roos, 1998). "It takes about

10 years to train a soldier in an armor unit to the level required for him to effectively command the crew of a main battle tank" (Roos, 1998, p. 18).

The U.S. House Committee Report on the fiscal year 1999 National Defense Authorization Act states that "the committee continues to be concerned that the services are not able to attract sufficient high quality recruits to maintain the quality force so critical to military readiness" (U.S. Congress, House Committee Report, Title V). It also stated that

the Army was barely able to meet their recruiting objectives in fiscal year 1997 despite reducing recruit quality objectives, increasing the number of field recruiters, lowering accession goals, and adding over \$100.0 million to recruiting accounts (U.S. Congress, House Committee Report, Title V).

The Navy has experienced similar problems. "During the first quarter of fiscal year 1998, Navy recruiters missed their mission by over 1,400 recruits and the Navy offered little hope of recovery before the end of the year" (U.S. Congress, House Committee Report, Title V).

The strong U.S. economy and the attraction of college for America's young people has made recruiting and retaining difficult for the All-Volunteer Force. In 1997, the U.S. unemployment rate was at 4.8 percent, the lowest rate since 1973 (Karl, 1997). In the spring of 1998, one in three Fortune 500 companies were hiring (CNN, 1998) and the United States had the lowest core inflation in 30 years and the lowest welfare rolls in 27 years (U.S. President, 1998).

3. Improve Force Management Procedures Throughout DoD

As the U.S. armed forces continue to downsize and the number of peacekeeping and smaller-scale contingency operations remain at the same level or expand, it may become increasingly difficult to retain high quality personnel. Maintaining and training military personnel is a Department of Defense challenge that requires innovative leadership, diligent planning, and careful management of resources. If force management procedures are left unchecked, the viability of the All-Volunteer Force may be in jeopardy.

The Department of Defense has made great strides with force management over the past few years. As Chapter III will show, PERSTEMPO and its impact on the All-Volunteer Force has received great interest from the Service Chiefs, the combatant commanders, their staffs, the Office of the Secretary of Defense, and the Joint Staff. As one General, (head of the Air Force's Air Combat Command) acknowledged, "We've got some severe stresses. There's not enough resilience in the force" (Newman, 1998, p. 40).

The number of joint exercises that are scheduled through the year 2000 has been reduced by about 10 percent (Roos, 1998). Services have limited the maximum time soldiers and sailors should spend away from home station. The Services have also developed better tracking systems to monitor this time away from home station---PERSTEMPO. But, force management issues and problems that are sometimes easily seen, are not so easily tracked and measured. Chapters III and IV address these issues.

OPTEMPO / PERSTEMPO are not the only factors one must consider when assessing what it takes to attract and retain top quality military personnel. The 1998

Annual Report to the President and the Congress lists fifty-four quantitative measures for readiness, recruiting, and retention. Twelve of the fifty-four measures are displayed in Table 2.5.

Table 2.5: Quantitative Readiness, Recruiting, and Retention Factors

Pay, bonuses, and allowances	Time away from home
Promotion opportunity	Family and bachelor housing units
Attitudes toward military service	Percent of military jobs open to women
Funding for unit training	Privatized family housing
Number of DoD family centers	Degrees awarded
Civilian work force opportunity	Discrimination / harassment complaints

Source: U.S. Department of Defense, Office of the Secretary of Defense, 1998, pp. J-13 and J-14.

As stated earlier in this chapter, one should not underestimate the international conflict challenges that lie ahead of us. Each service is not only responsible for preparing for these challenges, but they are also responsible for assessing peacetime engagements and smaller-scale contingency operations, and determining their own OPTEMPO.

Although organizing and training sailors and troops may be difficult with defense resource shortfalls, there are few options in supporting the President's *National Security*

Strategy. When addressing this issue, the Chairman of the House National Security Committee stated that

Congress will never be able to do more than make improvements at the margin in the absence of additional defense resources. The magnitude of the shortfall is so great that they [quality of life, readiness and other resource shortfalls] cannot be eliminated by simply reprioritizing the President's request (U.S. Congress, House, May 21, 1998, p. 1).

This section has shown that the future of the All-Volunteer Force does not solely rest on money issues, but also on management procedures and leadership ability.

D. SUMMARY

Peacekeeping and smaller-scale contingency operations have not declined in numbers due to the end of the Cold War. In fact, they have increased. This increase, along with the fact that active duty end strength has been reduced by approximately thirty-five percent since 1989, has increased PERSTEMPO for the U.S. military. Although PERSTEMPO is not the only issue that needs to be considered when discussing military quality of life and readiness aspects for the All-Volunteer Force, it is a prominent feature.

In 1989, when addressing the funding constraints that Congress had placed on the military during the initial post-Cold War reduced budgets, a well known military analyst wrote that the "services tend to see such a diet [funding constraints] as a temporary state of affairs--one that will change when the 'enemy' manifests itself or when the political winds shift again in their favor" (Builder, 1989, pp. 202-203).

Perhaps the Services did see it that way at one time, but now that nine years have passed and the political winds continue to blow towards growing resource shortfalls, it is becoming more and more difficult to be as optimistic as the Services were in 1989.

Senior leaders, both civilian and military, are now asking themselves, as General Clark and General Zinni were asked in the spring of 1998, "How much risk is too much? How much longer can we ask the troops to do more with less?"

The House National Security Chairman states that "the list of peacekeeping commitments continues to grow: from the Sinai, to Haiti, to Somalia, to Rwanda" (U.S. Congress, House, February 12, 1998). Fourteen years of military budget reductions have been far from "a temporary state of affairs," and the next fourteen years portrays a similar outlook---an active military force, doing more with less.

The *Annual Report to the President and the Congress* states that PERSTEMPO is at "acceptable levels" but also states that "the Department [of Defense] has made PERSTEMPO a focus of its quality of life effort in order to avoid future problems" (U.S. Department of Defense, Office of the Secretary of Defense, 1998, p. 91). Chapter III and Chapter IV will deliver insight on how the Department of Defense, specifically the Joint Chiefs of Staff, has undertaken efforts to address peacetime engagement demands, to measure these demands, and to avoid future problems. The fate of the All-Volunteer Force may depend on our ability to accurately measure and evaluate these demands.

III. BASELINE ENGAGEMENT FORCE ASSESSMENT

The focus of this chapter is an assessment conducted by the Force Structure, Resources, and Assessment Directorate (J-8) of the Joint Staff. This assessment, called the Baseline Engagement Force Assessment, was developed to gain quantifiable insights on the level of effort required to support peacetime engagement and enlargement with an All-Volunteer Force.

Major General Hamilton, Vice Director of the Force Structure, Resources, and Assessment Directorate (J-8), chaired the Force Structure Panel of the Quadrennial Defense Review. During the Quadrennial Defense Review process, Major General Hamilton saw a need to quantify the demand on the All-Volunteer Force and the amount of effort needed to support peacetime engagement activities.

Significant factors supporting this need include:

- The Bottom Up Review (BUR) evaluated engagement activities but assumed the capabilities required were lesser and [were] included within the two Major Regional Conflict (MRC) force structure;
- The intelligence community and the Joint Strategy Review (JSR) indicated the engagement activities for the last five years would be similar to the near term future;
- Two Services typically associated with Major Regional Conflict force structure (Army and Air Force) were migrating to engagement activities more typically associated with the maritime forces;

- Multiple reports were received [from both senior military and civilian leaders via discussions with troops and sailors] of personnel spending "a large number of days" away from their families and / or home station;
- The overall force structure was going down, but peacetime engagement activities were going up; and
- When asked, Services were not able to produce a broad and quantifiable data base to articulate peacetime demand (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997, p. 1).

Correspondingly, a study was conducted from the fall of 1996 to the summer of 1997, where these issues were investigated. The study, called the Baseline Engagement Force Assessment, was a collaborative effort among the Office of the Secretary of Defense (OSD), the Joint Staff, the Military Services, and selected Commanders in Chief (CINCs).

Over a period of six months, the Baseline Engagement Force Assessment collected PERSTEMPO data from all the Services. Data were collected on seven different dates. For trend information, the data collection dates were July 1992, July 1993, July 1994, July 1995, and July 1996. The other two data dates were February 1991 (start of Desert Storm ground campaign) and October 1994 (peak smaller-scale contingency operations during the Haiti buildup).

A. DEPLOYMENT DEMANDS

Figure 3.1 displays the variance among deployment reporting methods for all active duty forces from the July 1996 Baseline Engagement Force Assessment data. Each

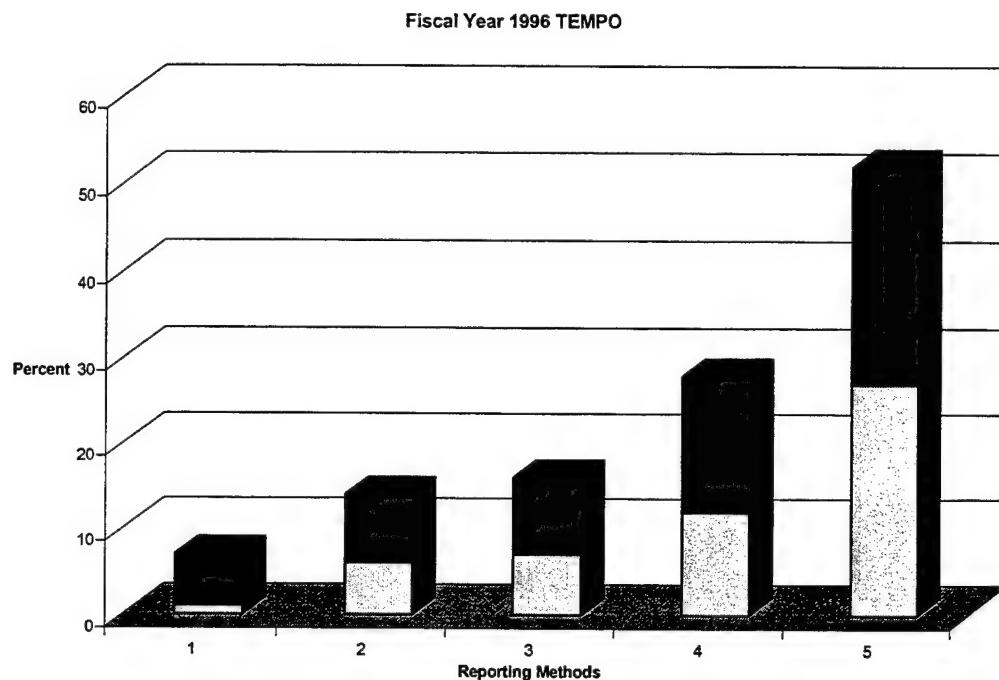
column in Figure 3.1 indicates the percentage of forces deployed as calculated by one of the specific reporting methods. The percentage of forces deployed is different for each of the five columns because of differences in measurement systems and reporting methods.

Deployment data for the Air Force, Army, Navy, and Marine Corps are included in each of the five reporting methods in Figure 3.1. Each column also represents the high-low range among the Services. For example, the horizontal line in column two is at six percent. The top of column two is at fourteen percent. The horizontal line at six percent represents the lowest deployment percentage among the Services and the top of the column at fourteen percent represents the highest deployment percentage among the Services.

1. Column One: Weekly Brief

Every week the Secretary of Defense and the Chairman of the Joint Chiefs of Staff are briefed on the deployed force operating tempo. Column one represents the average number that was briefed to the Chairman of the Joint Chiefs of Staff and Secretary of Defense for 1996. It is the average of the weekly inputs by the Commander-In-Chief staffs for forces deployed to selected major named operations. Column one indicates that a maximum of six percent of the active duty end strength is deployed.

Figure 3.1: Methods of PERSTEMPO Reporting



1. Weekly brief to Secretary of Defense and CJCS.
2. Routine exercises and support activities over end strength.
3. Routine exercises and support activities plus one year overseas tour over end strength
4. Routine exercises and support activities plus one year overseas tour over deployable pool
5. Deployable forces away from home bunk / home pier

Source: U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate (J-8), 1997.

2. Column Two: Various Exercises and Deployments

While column one is limited to only major named operations, column two is not. Column two includes those forces on routine deployment, forces involved in exercises, forces supporting partnership for peace commitments, and forces in various theater support activities. Column two indicates that a maximum of fourteen percent of the active duty end strength is deployed.

3. Column Three: Overseas Tours

Column two does not include U.S. forces deployed on unaccompanied overseas tours. The duration of unaccompanied overseas tours vary from twelve to fifteen months, depending on the Service and the duty station. During this twelve to fifteen month period, families are not stationed with military members.

Until November of 1996, personnel on unaccompanied overseas tours were not tracked as deployed forces. Following November of 1996, the Secretary of Defense directed that all personnel on unaccompanied overseas tours be reported as deployed forces.

The number of personnel on unaccompanied overseas tours varies among the Services. The numbers for the Army are between 25,000 and 30,000. This large number of forces on mandatory unaccompanied overseas tours is, for most part, due to two Army brigades in Korea and the anti-terrorism force protection policy adopted by the U.S. military shortly after the Kobar Towers bombing in Saudi Arabia.

The four percent increase for the maximum deployed active duty end strength, from column two to column three, is due to including personnel on unaccompanied overseas tours as deployed. Column three indicates that a maximum of sixteen percent of the active duty end strength is deployed.

4. Column Four: The Deployable Pool

Ideally, the Baseline Engagement Force Assessment wanted deployment data from the Services such that when a Service member was away from home port or home bunk, he or she was considered deployed. None of the Services could produce this data. With this in mind, the Baseline Engagement Force Assessment, with inputs from the Services, developed a concept called the *deployable pool*.

The deployable pool consists of forces available to immediately respond to a crisis. While each Service had a definition of deployment (see Table 3.2), the deployable pool was not defined. The Baseline Engagement Force Assessment defined the deployable pool to establish a concrete standard for determining deployment percentages for all the Services.

Table 3.2: Service Definitions of Deployment

Army	Navy	Air Force	Marine Corps
7 days or more (3 days for Special Forces)	56 days or more	1 day or more	10 days or more away from home station

Source: U.S. Government Accounting Office, 1996, p. 16.

One of the major insights provided by the Baseline Engagement Force Assessment is that the deployable pool is absorbing the burden of deployments, not the total Service end strength. The Baseline Engagement Force Assessment defined the deployable pool as shown in Table 3.3.

Table 3.3: The Deployable Pool

Service	Definition of Deployable Pool
Air Force	Forces reported as current operations, forward based, domestic MRC forces, and strategic forces
Army	All Modified Table of Organization and Equipment (MTOE) forces (except the 2nd Division in Korea, one division in Germany, and two other units that are non deployable MTOE forces)
Marine Corps	The Fleet Marine Force
Navy	All ships and squadrons

Source: U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997.

Column four in Figure 3.1 represents the same data as column three, except the denominator for column three is the total Service end strength, and the denominator for

column four is the deployable pool. This difference results in an twelve percent increase for those reported as deployed. Reflecting this increase, column four indicates that a maximum of twenty-eight percent of the deployable pool is deployed.

5. Column Five: Away From Home

The fifth and final column in Figure 3.1 represents another increase in the percent of personnel deployed, and more diversity among reporting methods and concepts. In this column, a deployment is defined as any activity that will result in the Service member not being able to come home at night (not including duty nights). This includes, but is not limited to, local training, work-ups, and exercise operations. When these numbers are included and added to column four, the deployment percentage reaches fifty percent.

Column five indicates that on the average, at any given time during fiscal year 1996, half of the deployable forces were away from home. This is in contrast to the six percent figure that was reported to the Secretary of Defense and the Chairman of the Joint Chiefs of Staff.

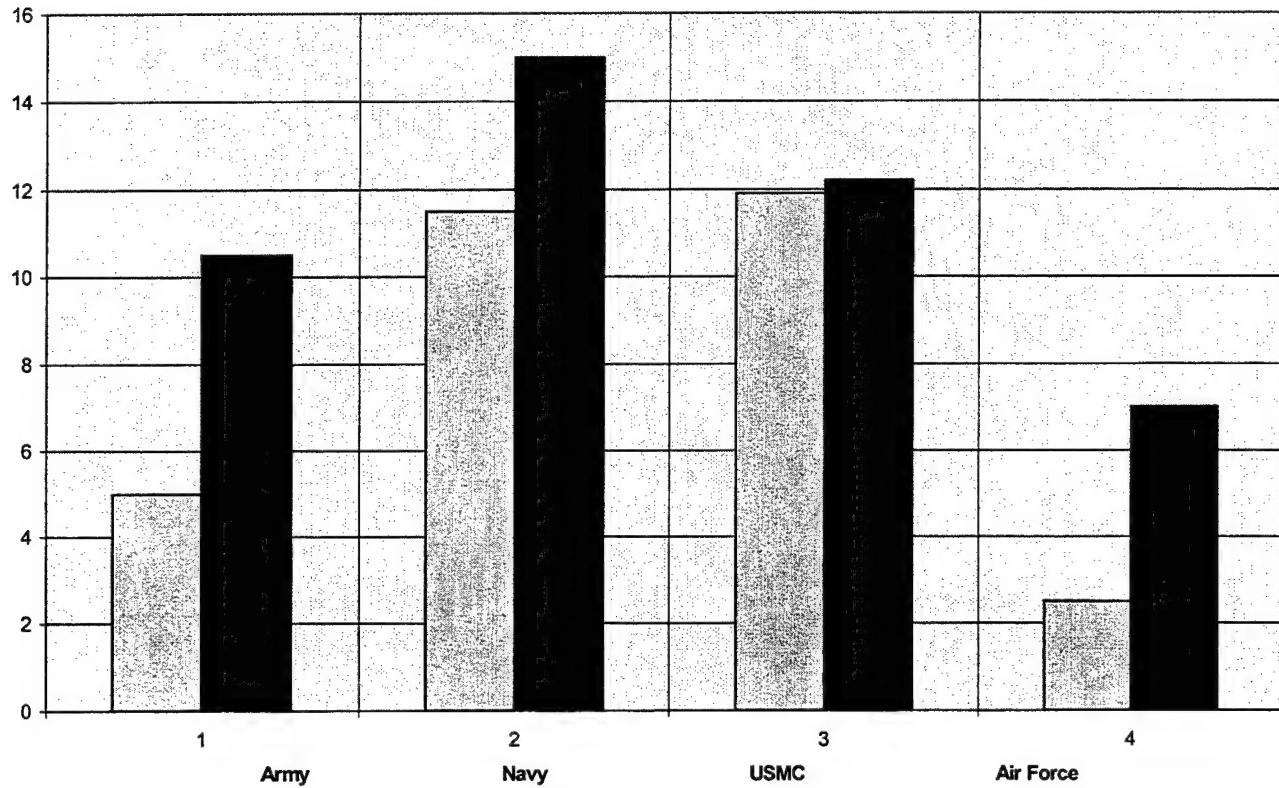
B. COLD WAR VERSUS POST-COLD WAR PERSTEMPO

After understanding what the Baseline Engagement Force Assessment revealed, faults can easily be found in other reporting methods and concepts. This section identifies and discusses some of those faults.

Consider Figure 3.4, a graph that was published in the Army Times. The article that accompanies the graph discusses a high PERSTEMPO in the U.S. military. The

graph has a few misleading elements that will be discussed in the remainder of this section.

Figure 3.4: Percent Personnel Deployed*



*Data is approximate based on family separation allowance

■ Series1
Cold War perstempo 1988-1990 ■ Series2
Post-Cold War perstempo 1992-1996

Source: Army Times, January 19, 1998, p. 4.

1. Family Separation Allowance

Family separation allowance (FSA) is a non-taxable monthly pay of seventy-five dollars to Service members who have been deployed for thirty days or more. The data from Figure 3.4 are based on family separation allowance. Although the reader may notice this in the small print below the graph, the reader may not know that family separation allowance is not authorized until day 30 of a deployment. The data does not take into account personnel away from home port or home bunk for periods less than thirty days. In other words, personnel in the Navy, returning home from sea on day 29, are not considered deployed using this parameter.

The majority of all training and local operating exercises for the Navy consist of underway periods fewer than thirty days. With this in mind, and from what the Baseline Engagement Force Assessment revealed, it can be assumed that the deployment percentages in Figure 3.4 are underestimated by as much as thirty-five percent.

This underestimation of thirty-five percent assumes that the average of the percentages in Figure 3.4 is comparable to column three of Figure 3.1. That is, family separation allowance does not: 1) take into account the difference between end strength and the deployable pool, and 2) take into account local training, work-ups, and exercise operations (each typically less than thirty days in duration). The maximum percent of personnel deployed in Figure 3.4 is approximately fifteen percent for the years 1992 through 1996. The maximum percent personnel deployed in Figure 3.1 is approximately fifty percent for the year 1996. This is a difference of thirty-five percent.

2. Service Comparisons

Another misleading element with a graph of this type is the notion that deployment percentages among the different Services can be compared. For example, it looks like Navy PERSTEMPO is much higher than Air Force PERSTEMPO. The reason one cannot make this assumption, or any other assumption when comparing PERSTEMPO among the Services, is that each Service deploys forces and operates differently on a daily basis. Each Service also "has different (1) definitions of what constitutes a deployment, (2) policies or guidance for the length of time units or personnel should be deployed, and (3) systems for tracking deployments" (U.S. Government Accounting Office, 1996, p. 16). Table 3.5 indicates different measurement systems among the Services.

Another element that must be considered when attempting to compare deployment percentages among the different Services is family preparation time. For example, the Navy and Marine Corps usually have deployment schedules drawn out far in advance. The Air Force and Army have no such deployment schedules. Although personnel from the Air Force and Army typically deploy for shorter periods of time, they also typically have much shorter notifications of deployments. Quality of life issues for military personnel, must not only take into account time away from homeport and home bunk, but preparation time spent with family members preceding the deployment.

Table 3.5: Service Deployment Measurement Systems

Measurement	Army	Navy	Air Force	Marine Corps
Definition of deployment:	7 days or more (3 days for Special Forces)	56 days or more	1 day or more	10 days or more away from home station
Policy or regulation limiting deployments:	No policy, but goal of no single deployment over 179 days	Yes, policy limits deployments to 180 days / 6 months	No policy, but maximum desired level of 120 days per year	No policy, but goal of no single deployment over 6 months
System tracking capabilities	Unit and individual	Unit only	Major weapon systems and individual	Unit only

Source: U.S. Government Accounting Office, 1996, p. 16.

C. GENERAL ACCOUNTING OFFICE PERSTEMPO

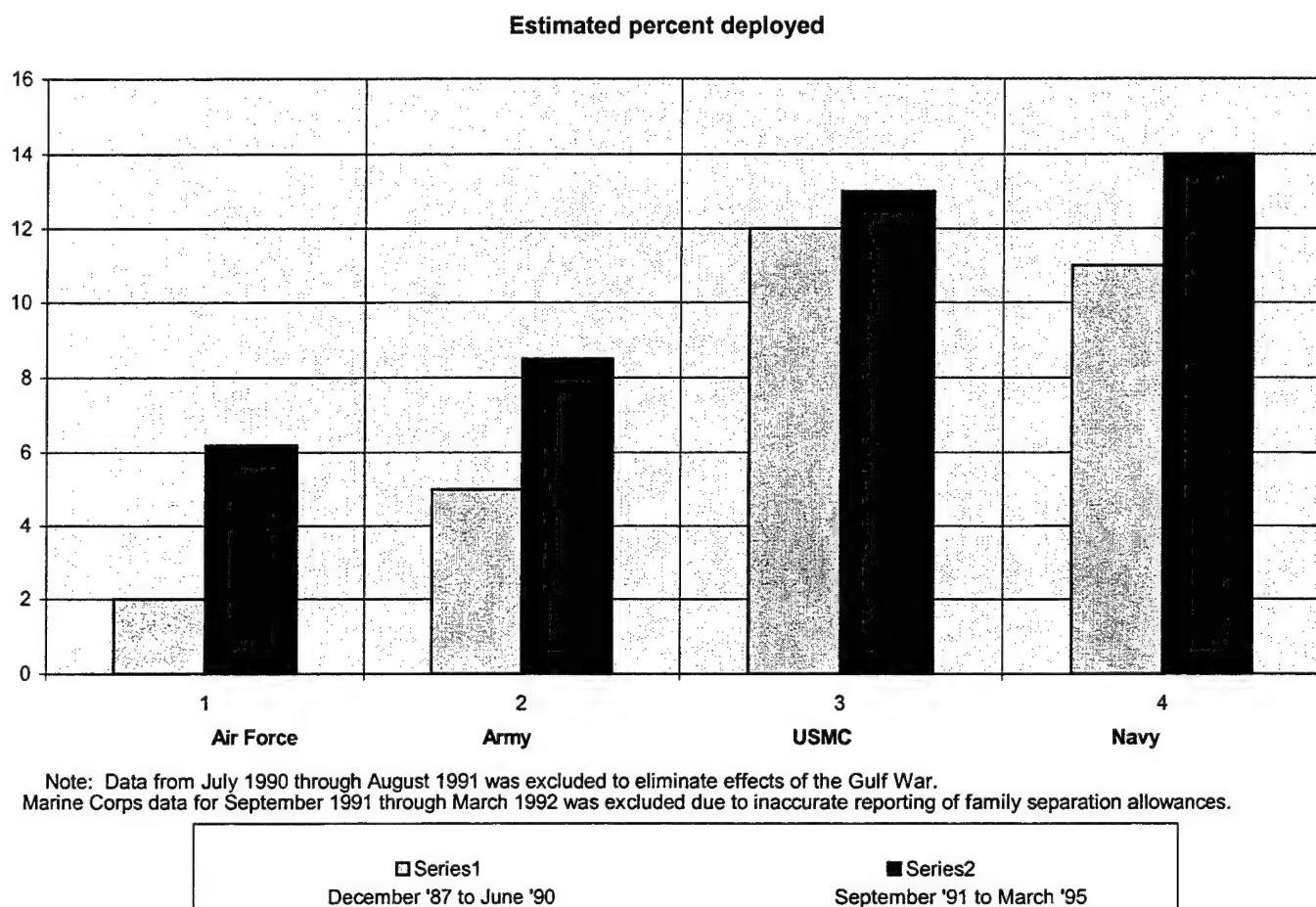
Another example of understated PERSTEMPO reporting is found in a report to congressional requesters from the United States General Accounting Office. Figure 3.6 is a graph taken from that report which indicates the estimated percent of personnel deployed for each Service.

The most likely source of the data for Figure 3.6 is family separation allowance figures. This is suggested by the statement at the bottom of the graph, "Marine Corps data for September 1991 through March 1992 was excluded due to inaccurate reporting of

family separation allowances" (U.S. Government Accounting Office, 1996, p. 4). Recall that family separation allowance figures are the data that was used to produce Figure 3.4.

In summary, Figure 3.6 is essentially the same as Figure 3.4. The dates are different but the percentages are similar, and the errors are the same.

Figure 3.6: GAO Data for PERSTEMPO



Source: U.S. General Accounting Office, 1996, p. 4.

D. BASELINE ENGAGEMENT FORCE ASSESSMENT THEMES

The Baseline Engagement Force Assessment revealed that PERSTEMPO reporting among the Services is diverse in that reporting and tracking methods and concepts differ. Because of a misunderstanding of reporting and tracking methods and concepts, PERSTEMPO has been under-reported. Errors, by a factor of ten, consistently occurred when reporting PERSTEMPO to the Secretary of Defense and the Chairman of the Joint Chiefs of Staff. This may lead to profound negative impacts on the effectiveness of planning and managing fleet exercises, peacekeeping operations, and smaller-scale contingency operations.

Another finding was that the current PERSTEMPO is placing heavy demands on the deployable pool, rather than the end strength. PERSTEMPO increases by twelve percent when the deployable pool is placed in the denominator when calculating deployment percentages.

Finally, the Baseline Engagement Force Assessment revealed that there is no tool or model available for any of the Services to conduct real time assessments of PERSTEMPO. As a result, it is difficult for the Services to measure deployment impacts and provide long-term guidance and oversight on various PERSTEMPO issues affecting personnel readiness, quality of life, unit cohesion, and career satisfaction. Chapter IV will address these issues by focusing on the Baseline Engagement Force Model.

E. SUMMARY

Due to the reduction in force size, along with the increase in peacetime engagements, the deployable force has been spending up to fifty percent of their nights away from home port and home bunk (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997). This PERSTEMPO rate may make it difficult for the Services to recruit and retain the number and types of personnel needed for national security. The *Report of the Quadrennial Defense Review* notes that “if not adequately managed, the demand for peacetime operations, coupled with a smaller force, could overstress personnel operating tempo and take its toll on the quality of life of military personnel that is the foundation of long-term readiness” (1997, p. 37). Consequently, a high personnel operating tempo could endanger the All-Volunteer Force concept.

The Baseline Engagement Force Assessment showed that there are multiple ways of looking at the peacetime engagement and smaller-scale contingency demands on the All-Volunteer Force. It showed that PERSTEMPO reporting among the Services is diverse in that reporting methods and concepts differ. Because of a misunderstanding among reporting methods and concepts, peacetime PERSTEMPO has been consistently under-reported. Finally, the Baseline Engagement Force Assessment revealed that peacetime PERSTEMPO is placing heavy demands on the deployable pool, not the end strength.

IV. BASELINE ENGAGEMENT FORCE MODEL

The focus of this chapter is the personnel inventory and unit deployment model developed by the RAND Corporation and the Systems Research and Applications (SRA) Corporation for the Joint Staff. The model was derived from a Quadrennial Defense Review requirement. Called the Baseline Engagement Force Model, it was developed to assist senior decision-makers in assessing: 1) available capability, 2) unit deployability, and 3) career impacts (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997).

A. NEED FOR MODEL

At the completion of the Quadrennial Defense Review, there was a need for a model that would articulate and calculate the demands that peacetime engagement and smaller-scale contingency operations placed on the All-Volunteer Force. These demands are best captured by PERSTEMPO measurements. The Baseline Engagement Force Assessment revealed that there is no tool or model available for any of the Services to conduct real time assessments of PERSTEMPO.

The Baseline Engagement Force Model was developed within the Forces and Resources Policy Center of RAND Corporation's National Defense Research Institute and the Systems Research and Applications (SRA) Corporation. The Model was initially built for the Army, with other Service models to follow.

The Baseline Engagement Force Model, funded by the Force Structure, Resources, and Assessment Directorate (J-8) of the Joint Staff, allows for senior decision-makers to assess three elements of military personnel management (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997).

The first element is *available capability*. Force requirements have evolved from a threat-based to a capability-based force. The availability of the force to respond is assuming new importance. In a peacetime demand environment, committing a capability today may limit that capability's availability in the future. This element is further explained in this Chapter under a concept called "surge induced harmonics."

The second element is *unit deployability*. All units are different in their ability to respond and deploy. The Model must have a detailed tracking and assessment system that takes this into account.

The final element is *career impacts*. The Baseline Engagement Force Assessment identified some of the stress that is being placed on the All-Volunteer Force. Before committing U.S. forces to various operations, deployments, and other hardships, senior decision-makers must understand the implications of such actions for military careers over the long term.

B. BASIS OF MODEL

Each military unit depends on several complex factors that determine its ability to perform a mission. The premise of the Baseline Engagement Force Model is that there

are key personnel performance attributes that are critical to mission success. The RAND and SRA Corporations, in conjunction with the Joint Staff, determined that a model can be used to assess six key personnel performance attributes.

1. Personnel / Unit Readiness

The first performance attribute is *personnel / unit readiness*. U.S. policy is to have the best equipped, best prepared, best trained, and most capable military forces. These forces must quickly respond to threats, commitments, smaller-scale contingencies, and major regional conflicts around the world. This policy represents an aggressive, complicated, and aspiring goal for the U.S. military.

In general, maintaining readiness is not an easy task to accomplish, define, or measure. However, personnel readiness, "tends to be straightforward-- do units have sufficient people in the right grade and skill to meet their resource design?" (RAND, 1998, p.2). This is the dimension of readiness addressed by the Baseline Engagement Force Model.

2. Geographic Stability

The second performance attribute is *geographic stability*. Simply stated, geographic stability is the "reasonable balance between military needs and individual and family needs" (RAND, 1998, p. 2). In the unavoidable turbulence of the post-Cold War period, various factors must be taken into consideration when creating a sense of stability for military members. These include: 1) temporary duty assignments away from home, 2) compensation for poor living conditions and second-rate schooling for children (such

as those found in many overseas bases), 3) deployments, 4) housing, 5) family support when on deployment, and 6) personnel tempo.

The 1998 Annual Report to the President and the Congress emphasizes the importance of personnel tempo as an important component of stability (U.S. Department of Defense, Office of the Secretary of Defense, 1998). The report also notes that this is an important issue to consider because personnel tempo has increased as force levels for the Services have decreased. The bottom line is, if personnel tempo becomes too high, it may have a negative effect on force stability.

3. Resiliency / Force Stress

The third performance attribute is *resiliency / force stress*. This is a measure of the ability of Service units and members to adapt to a deployed status. It is also a performance measure of missions conducted in a stressful and changing environment when deployed. Service units or members that are overstressed are not resilient, i.e., they lack "the capacity for continuous performance of the most arduous or most frequent missions" (RAND, 1998, p. 3).

4. Unit Cohesion

The fourth performance attribute is *unit cohesion*. This is an integral bonding characteristic ideally present in all Service units. It is a coordinated effort by members acting together for a common cause. Unit cohesion "sustains commitment to one another and gives congruence of effort of group members toward common goals" (RAND, 1998, p. 3).

5. Quality of Life

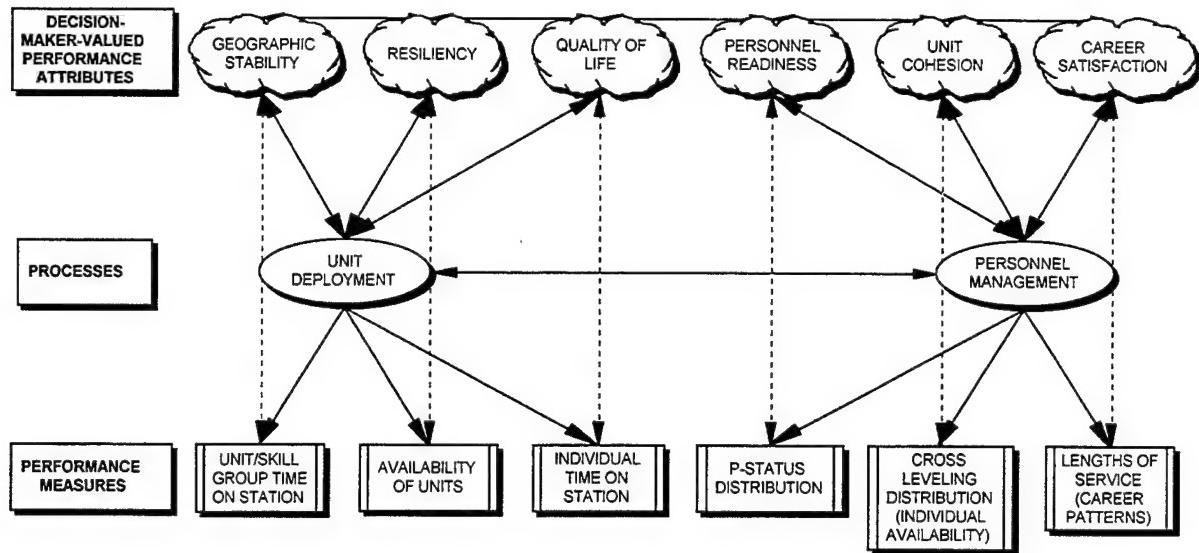
The fifth performance attribute is *quality of life*. This is an all encompassing term that describes issues that support and give predictability and stability to military life and military careers. Improving quality of life issues for Service members strengthens readiness, recruiting, and retention issues (U.S. Department of Defense, Office of the Secretary of Defense, 1998).

6. Career Satisfaction

The sixth and final performance attribute is *career satisfaction*. This attribute describes the extent to which Service members are pleased with the direction, outcome, condition, and progression of their achievements in their profession.

Because each of the performance attributes is broad in scope and difficult to measure, performance measures were selected as indicators of performance attributes. For purposes of the Baseline Engagement Force Model, if the performance measure is enhanced or becomes more desirable, performance attributes corresponding to that performance measure are enhanced and become more desirable. Figure 4.1 shows the relationship between performance attributes (outcomes) and performance measures (input).

Figure 4.1: Attributes, Processes, Performance Measures



Source: RAND Study Group, 1998.

The six performance measures (input data for the Baseline Engagement Force Model) are summarized in the remainder of this section.

The first performance measure is *unit / skill group time on station*. This is the time that a military component or sub-specialty group spends at a location away from home port / home bunk.

The second performance measure is *availability of units*. This is the extent to which military components are accessible, trained, and ready for a mission.

The third performance measure is *individual time on station*. This is the time that a military member spends at a location away from home port / home bunk (due to the rotation of personnel from one command to another, this may or may not be the same figure as *unit / skill group time on station*).

The fourth performance measure is *P-status distribution*. This is a measure in the personnel portion of Unit Readiness Reports. The P-status distribution is divided into three components. Each component yields a percentage. These percentages can be subdivided in order to describe a unit , a skill group within a unit, or a pay grade.

The first component of the P-status distribution is the number of personnel assigned over the number of personnel authorized. An important aspect to consider with this component is that even if a unit's percentage is 100, there still may be manning problems. For example, a submarine gets underway with a crew of 100 percent (i.e., the number of assigned over the number of authorized equals one). However, the electronic technicians are manned at 80 percent and the sonar technicians are manned at 120 percent. This may create a scenario where the sonar technicians have a high resiliency and the electronic technicians have a low resiliency.

The second component is the number of personnel available over the number of personnel authorized. The difference between this component and the first component described above is that not all members of a unit may be available to deploy. This can be due to medical, administrative, or training issues. For example, a unit may prove to be more effective in the accomplishment of its mission if it sends recently reported troops to a military school vice deploying with the unit. These troops are authorized at the command, but they are not available to the command for deployment purposes.

The third component is turnover rate. Turnover rate is a percentage that describes the pace at which Service members are replaced by other Service members in a unit. For example, a turnover rate of thirty percent per year would mean that thirty percent of the

members of a unit leave for another command and are replaced by other Service members in one year. For the junior officer submarine community, a typical sea tour at a command is three years. Therefore, the turnover rate is about thirty-three percent (i.e., every three years the entire junior officer wardroom will have been replaced).

The fifth performance measure is *cross leveling distribution* (individual availability). This is the extent to which military members are accessible, trained, and ready for a mission.

The sixth and final performance measure is *lengths of service*. This is a measure of trends in career patterns.

Each of these six performance measures, indicators of performance attributes, is an input for the Model. Inputs, and the way the Model produces outputs, will be further discussed in the next section.

C. MODEL INPUT AND OUTPUT

The Baseline Engagement Force Model application runs on a personal computer with a Windows 95 or Windows NT operating system. Input data for the Model come from an Oracle database. Output data for the Model are used as input to MatLab, Microsoft Access, or Microsoft Excel.

Output data can then be used to make graphs or charts that "depict turbulence, personnel shortages, and tour curtailment averages over time at the theater, installation, and unit level" (RAND, 1998, p. iv). Technical information about the Model is located in Appendix B.

1. Statistical Process Control

The Baseline Engagement Force Model uses the technique of statistical process control (SPC). "Statistical process control, commonly employed in manufacturing industries, is a suite of statistical techniques used to detect when processes change" (RAND Study Group, 1998, p. 6). Over a period of time, data can be graphically displayed and used as a decision tool for senior analysts and leaders.

Using the statistical process control technique, a process or policy has two sets of control limits. Control limits are decision rules which define when a process is suspected to have gone out of defined operating regions. The two sets of bounds that define desirable operating regions are: 1) an upper control limit (UCL) and a lower control limit (LCL); and 2) an upper specification limit (USL) and a lower specification limit (LSL).

While it is not desirable for a process to be outside its control limits, the process is still capable of functioning in this state. However, if outside its specification limits, the process is neither desirable nor capable of functioning. For example, in industry, if a steel tube is machined to a size that is outside the control limits, but within the specification limits, it may not fit inside a cavity correctly (the steel tube may be slightly too big and therefore fit too tight), but the machined part will work for an abbreviated time. However, if the steel tube is machined to a size that is outside the specification limits, it will not, in any way, fit inside the cavity. Ideally, a process would be within its specification limits and its control limits.

For a Baseline Engagement Force Model example, see Figure 4.2. This figure describes service member turnover rate for a fictitious unit with respect to time. At the

four month time period, turnover rate gradually climbs (perhaps due to deployment preparation for a smaller-scale contingency operation) to about fifty percent. Notice that between the nine and fifteen month time period, turnover rate is above the upper control limit, but below the upper specification limit. During this period, the process (turnover rate) is not in control, but it is in specification. In other words, although not a desirable situation, the unit is capable of functioning at this level of turnover (below fifty five percent) for some period of time.

In this example, the reason the unit is capable of functioning (process is in specification) is because senior leaders knew far enough in advance that the unit would be preparing to deploy. In preparation to deploy, it was recognized that this unit would experience higher levels of turnover. Consequently, the upper specification limit was raised to fifty-five percent. This prevented the turnover rate from going above the upper specification limit.

The upper control limit is set at forty-five percent because below this value, turnover rate proves to be optimum for the unit during routine operations.

Figure 4.2: Service Member Turnover Rate for a Fictitious Unit

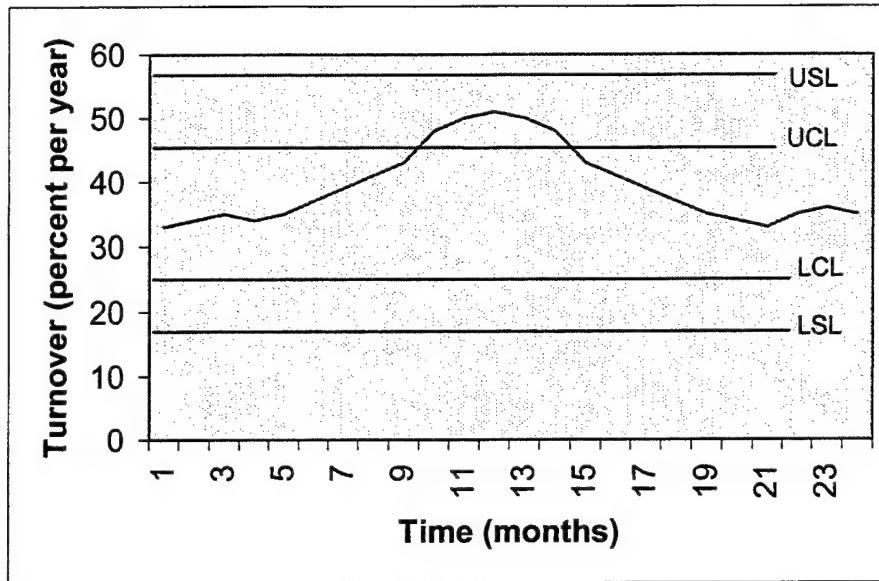
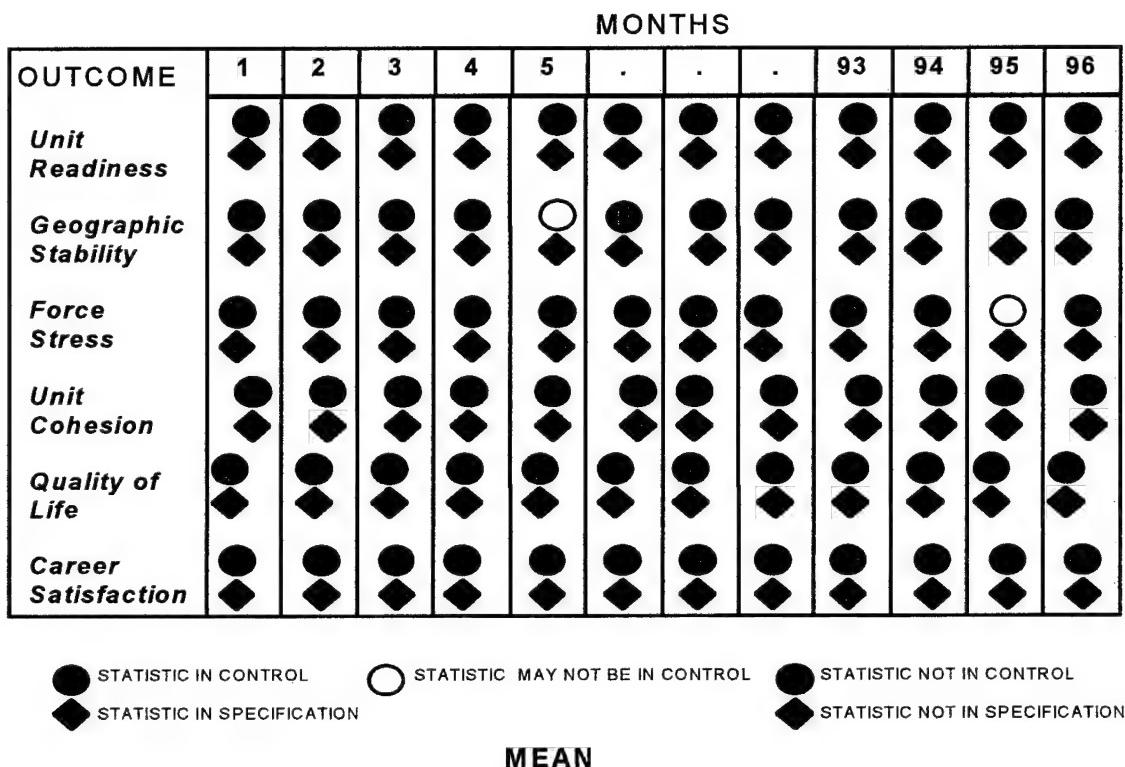


Figure 4.3 is an example of one type of output that displays overall results from all of the performance attributes for various time periods.

Figure 4.3: Example of Baseline Engagement Force Model Output



Source: RAND Study Group, 1998

The left hand side of Figure 4.3 displays the six performance attributes. The time period in months is displayed across the top. The upper light is color coded to indicate if the statistic is within control limits (green is in control, yellow may not be in control, and red is not in control). The lower light is color coded to indicate if units or individuals are meeting specification requirements. These lights will be green if in specification and red if not in specification.

D. SERVICE POLICY

A major factor in determining the outcome of the performance attributes the Baseline Engagement Force Model articulates is the deployment policy used by each Service. In a sense, the Model attempts to articulate and capture what happens when policy changes. For example, a typical six month Naval deployment is followed by a two week *stand-down* upon return to home port. During this stand-down, personnel from that unit report to work on duty days only (typically once every four or five days). If policy changes such that stand-downs are now three weeks in length, senior decision makers and analysts will be able to use Model outputs to assess how this may affect unit performance attributes on ships and at squadrons.

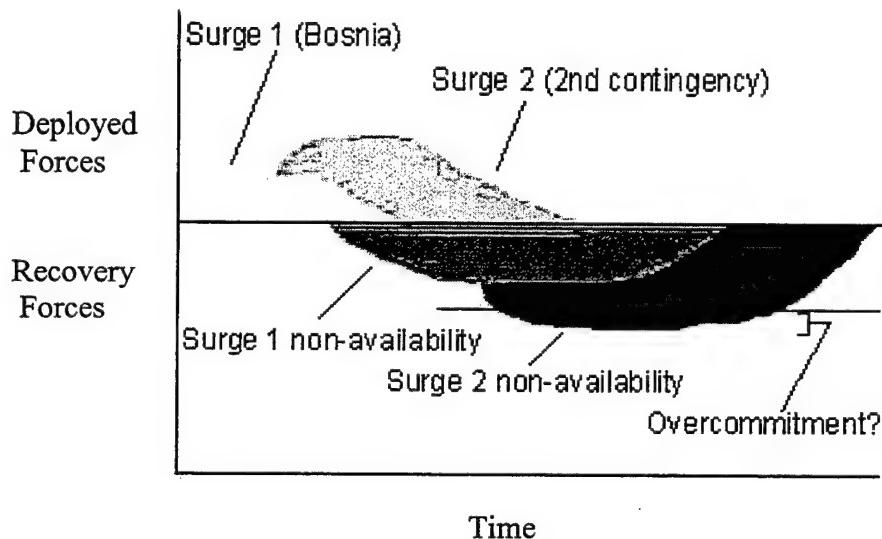
The two basic types of measures the Model uses for this analysis are percentages and time periods. Using the Navy stand-down policy example above, by inputting several years of data into the Model, averages of many observations for a time period can be evaluated and compared to other observations and distributions. A change in the Model input will yield a change in the Model output. In this way, the two week stand-down Model outputs can be compared to the three week stand-down Model outputs.

1. Surge Induced Harmonics

Another benefit of the Baseline Engagement Force Model is the ability to evaluate what the Baseline Engagement Force Assessment called *surge induced harmonics* (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997). Surge induced harmonics is a

term that describes the fact that many peacetime engagement and smaller-scale contingency demands impacting the All-Volunteer Force are not only affecting current deployments, but they are also affecting the deployment recover period. See Figure 4.4 below.

Figure 4.4: Surge Induced Harmonics



Source: U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate, 1997.

For every unit deployed (those above the horizontal line in Figure 4.4), there are corresponding units that are in the recovery phase (those below the horizontal line in Figure 4.4) that are not available to the Commander-In-Chiefs (CINCs) as assets. A larger number of committed forces will yield higher curves above the horizontal line. At a later time, when those forces are recovering, this will correspond to yielding a curve

that reaches further below the horizontal line. If the recovery phase curve falls below a predetermined amount (for example, the short horizontal line in Figure 4.4), the Service(s) may be imposing a deployment overcommitment. In other words, a *surge* of forces to a commitment (such as to Bosnia), will, at some later time, produce a surge of forces, twice the size of the deployed forces, in a recovery period. The following paragraph explains this concept further, using Air Force and Army policy.

The Air Force and Army have established a goal of limiting military members from being away from home station to 120 days per year (U.S. Department of Defense, Office of the Secretary of Defense, 1998). This means that the Air Force and Army must have a recovery force twice as big as the deployed force in order to support this policy (assuming approximately 360 days in a year). This is graphically displayed in Figure 4.4. The Surge 1 recovery force is approximately twice as large as the Surge 1 deployed force. The same can be said for the Surge 2 deployment force and the Surge 2 recovery force.

The Navy policy is somewhat different, but the same concept applies. The Navy policy is that units deploying for fifty-six days or more will return home and spend twice as long in the vicinity of home port as deployed. With a typical Navy deployment of six months, there must be a recovery force twice the size of the deployed force in the vicinity of home port.

What many assessments have failed to capture is that a Navy unit could come back from a six month deployment, take a two week stand down, then go out to sea for thirty days (less than fifty six days), and on the books, that would be within policy. However, going out to sea for thirty days should be considered a deployment (i.e., an

activity that will result in the Service member not being able to come home at night).

The Baseline Engagement Force Assessment determined that these types of deployments (local training, work-ups, and exercise operations) are raising PERSTEMPO from twenty eight percent to approximately fifty percent. It not only revealed that a high PERSTEMPO such as fifty percent may make it difficult for the Services to recruit and retain the number and types of personnel needed for national security, it also revealed that a high PERSTEMPO may lead to profound negative impacts on the effectiveness of planning and managing fleet exercises, peacekeeping operations, and smaller-scale contingency operations.

2. Policy Change

Another advantage of the Baseline Engagement Force Model is its ability to simulate policy changes. For example, one can simulate a change in the Air Force policy of limiting days away from home station. A limit of 130 days away from home station per year can be analyzed. The output of the Baseline Engagement Force Model can then be compared with the current policy of 120 days maximum time away from home station per year.

Similarly, the Baseline Engagement Force Model can simulate a Navy policy that mandates no deployments of longer duration than five months. The output of the Model can then be compared to the current Navy policy of no deployments of longer duration than six months.

For both the Air Force and Navy policy change examples above, there are two opposing metrics or processes. More time on station may not be beneficial in that it equates to a higher PERSTEMPO which may lead to lower resiliency and less unit cohesion. However, a higher PERSTEMPO may be beneficial in that it may raise force readiness by providing a training atmosphere that keeps units at peak readiness levels. This allows Services to more effectively react to major theater war and smaller-scale contingency response requirements.

From various policy comparisons, variable manipulations, and Model simulations, analysts and senior decision makers can see how personnel readiness, geographic stability, resiliency, unit cohesion, quality of life, and career satisfaction are affected by deployment and training policy changes. More importantly, the Baseline Engagement Force Model can provide each Service with the tools to be more efficient at formulating and organizing deployment and training policies.

E. SUMMARY

The Baseline Engagement Force Model is a leadership tool. It was designed to assist analysts and senior decision-makers in producing alternatives for reducing the impact of deployments on military members. It was also intended to help determine policy regarding the capabilities of the unit deployment and personnel management process---a policy which the military hopes will create a force that is ready, stable, satisfied, and cohesive.

The Model was first developed for use by the Army. Although various Army staff agencies have experimented with the Model, as of July of 1998 the Army is not using it. While the Army has not completely abandoned the idea of using the Model in the future, they have postponed a decision on its use. For the Army, the task of balancing and determining deployment and personnel management issues has been delegated to installation commanders (i.e., one or two star billets).

The Model was briefed to the Air Force. The Air Staff thought the Model would be useful when analyzing deployment and personnel management data, specifically looking at pilot retention and career satisfaction issues. However, the Air Force Personnel Command did not consider the Model as useful as the Air Staff. The Personnel Command believes their internal modeling efforts are sufficient for analyzing deployment and personnel management data. As of July of 1998, the Air Force was not using the Model.

The Model was scheduled to be developed for the Navy and Marine Corps last. This was primarily because they needed the Model the least. The Navy and Marine Corps typically have "set" deployment schedules that are forecasted long in advance. They also respond to most crisis operations with already deployed forces. This is not true for the Army and Air Force. They have more unpredictable deployments---responding to crisis operations on short notice. Because of the limited use of the Model by the Army and Air Force, the Force Structure, Resources, and Assessment Directorate of the Joint Staff decided to not develop the Model for Navy or Marines Corps use.

One advantage of having decentralized methods that analyze deployment and personnel management information (i.e., methods at the installation level for each of the Services) is that this level of effort may, to the soldier or sailor, be perceived to be more acceptable than centralized methods (i.e., methods developed inside the Pentagon). This is due to the perception that Pentagon officials are not as knowledgeable regarding PERSTEMPO issues as officials at the unit or individual level.

There may come a time when the Office of the Secretary of Defense queries the Services for explicit, concrete deployment and personnel management data (i.e., discrete data at the individual, unit, installation, theater, and Service level). When that occurs, the Baseline Engagement Force Model could be used to produce data at each of those five levels. When data such as this can not be found using decentralized methods, the Services may revert to, or recognize a need for, the Baseline Engagement Force Model.

When addressing the personnel reductions called for in the *Report of the Quadrennial Defense Review*, General Shalikashvili, former Chairman of the Joint Chiefs of Staff, stated that, "we must have the proper programs in place with adequate resources to carry out these reductions in a manner that honors our obligations to those who have served us so well" (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1997, p. 68). He added that, "we will continue to develop our management information and policies until we can carry out the strategy without overstressing the force" (p. 68). The Baseline Engagement Force Model represents this imperative to develop personnel management tools for the post Cold War environment.

V. ASSESSMENT AND CONCLUSIONS

The quality of life of our military personnel must be commensurate with the sacrifices we ask them to make (U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, 1997).

A. SUMMARY

The end of the Cold War and the emergence of a new world order has presented the United States with increasingly new, difficult, and complex challenges and opportunities. This thesis begins by providing information on these challenges and opportunities, and the uncertain future reflected by the *National Security Strategy* and the *National Military Strategy*. U.S. involvement in these challenges and opportunities, in the form of peacekeeping and smaller-scale contingency operations, combined with significant reductions in the size of the All-Volunteer Force and Department of Defense budget, has resulted in very high personnel tempos and related readiness concerns.

Fostering a more stable and peaceful world will require the U.S. military to continue its efforts to effectively conduct peacekeeping and smaller-scale contingency operations around the world. These operations are important for our National Security, but they demand a trade-off. Increasing foreign missions for National Security, along with decreasing Department of Defense personnel and dollars, can have negative effects on personnel, maintenance, training, and overall readiness.

B. TEMPO CHALLENGES

Mostly due to an increase in the number of smaller-scale contingencies (SSCs) and the reduction of U.S. military forces stationed overseas since the end of the Cold War, operating tempo has increased (U.S. Department of Defense, Office of the Secretary of Defense, 1998).

As of January 1998, U.S. military presence spanned 100 countries. In 31 of those countries, we had at least 100 personnel (Newman, 1998). From 1980 to 1989 the U.S. military was involved in 22 foreign missions. From 1990 to 1998 that number increased to 36 foreign missions (Newman, 1998). During this same month (January) in 1998, there were fifteen United Nations peacekeeping / non-conflict operations around the world manned by approximately 15,000 troops, military observers, and police from 71 countries (The Defense Monitor, 1998).

There are various ways of looking at and interpreting personnel tempo. Because of studies like the Baseline Engagement Force Assessment, the Department of Defense better understands the peacetime engagement demand on our All-Volunteer Force and has several initiatives underway to articulate and better understand this demand.

C. LESSONS LEARNED

The All-Volunteer Force of the late 1990s is doing more with less and this is not expected to change in the near future. The Department of Defense budget has been declining, measured in constant dollars, over the past fourteen years. Manpower has also been declining---a reduction of approximately 760,000 active duty personnel over the

past 13 years. The combination of these two factors has created a situation where leaders must pay careful attention to managing the resulting quality of life, readiness, and modernization issues.

1. Baseline Engagement Force Assessment

The focus of this thesis is a DoD assessment that explores one aspect of readiness--OPTEMPO/PERSTEMPO issues. The assessment, conducted by the Force Structure, Resources, and Assessment Directorate (J-8) of the Joint Staff, called the Baseline Engagement Force (BEF) Assessment, was developed to gain quantifiable insights regarding the level of effort required to support peacetime engagement and enlargement with an All-Volunteer Force. It was a collaborative effort among the Office of the Secretary of Defense (OSD), the Joint Staff, the Military Services, and selected Commanders in Chief (CINCs).

This effort had its origins in the Quadrennial Defense Review (QDR) process. During the QDR process, a need developed to quantify the demand on the All-Volunteer Force and the amount of effort required to support peacetime engagement activities. It became apparent that the Services were not able to produce a broad and quantifiable data base to articulate peacetime demand. A major portion of this demand is quantified by using OPTEMPO and PERSTEMPO data. Service OPTEMPO data were available but PERSTEMPO data were not.

The QDR process and the BEF Assessment revealed important differences between OPTEMPO and PERSTEMPO. OPTEMPO is the tempo of units. It is driven

by one factor, unit schedules. Unit schedules are largely determined by the number of peacekeeping and smaller-scale contingency operations.

PERSTEMPO refers to the level of activity of individuals. It is primarily driven by two factors, OPTEMPO and the size of the deployable pool. The size of the deployable pool affects personnel rotations from one unit to another (within the deployable pool). Personnel rotations affect the length of time a military member spends with a unit, and therefore affects PERSTEMPO. If force manning is reduced, the size of the deployable pool is correspondingly reduced, directly affecting PERSTEMPO.

For example, if OPTEMPO remains at a constant level, and the deployable pool size is reduced, PERSTEMPO will increase because of the reduced ability of the Services to rotate "new" personnel into the deployable pool (i.e., Lieutenant Jones and Private Ryan will remain in the deployable pool for four years vice three years before transferring to a non-deployable pool installation).

Until the mid-1990s, OPTEMPO and PERSTEMPO were considered essentially the same. The QDR process and the BEF Assessment revealed these important distinctions. The BEF Assessment indicated that PERSTEMPO reporting among the Services is diverse in that reporting and tracking methods and concepts differ. Because of a misunderstanding of reporting and tracking methods and concepts, PERSTEMPO has been under-reported. During fiscal year 1996, errors consistently occurred when reporting PERSTEMPO to the Secretary of Defense and the Chairman of the Joint Chiefs of Staff, sometimes by as much as a factor of ten.

Another finding was that the current PERSTEMPO is placing heavy demands on the *deployable pool*, not the total Service end strength. While each Service had a definition of *deployment*, the deployable pool was not defined. The deployable pool consists of forces available to immediately respond to a crisis. The BEF Assessment defined deployable pool to establish a concrete standard for determining deployment percentages for all the Services. PERSTEMPO increases by twelve percent when the deployable pool is used when calculating deployment data. Findings such as these, if not quickly corrected, may lead to profound negative impacts on the effectiveness of planning and managing fleet exercises, peacekeeping operations, and smaller-scale contingency operations.

The BEF Assessment also revealed that there is no tool or model available for any of the Services to conduct real time assessments of PERSTEMPO. As a result, it is difficult for the Services to measure deployment impacts and provide long-term guidance and oversight on various PERSTEMPO issues affecting personnel readiness, quality of life, and career satisfaction.

Finally, although not specifically addressed in Chapter III, the BEF Assessment revealed that within the deployable pool, selected skills are experiencing exceptionally high PERSTEMPO. In an effort to better manage these skills, Services could selectively reduce manning in under-utilized skills and raise manning in skills that are experiencing exceptionally high PERSTEMPO.

2. Baseline Engagement Force Model

The Baseline Engagement Force Model is a leadership tool that was designed to assist analysts and senior decision-makers in producing alternatives for reducing the impact of deployments on military members. The Model is able to produce discrete data at the individual, unit, installation, theater, and Service level. It was also intended to help determine policy regarding the capabilities of the unit deployment and personnel management process---a policy which the military hopes will create a force that is ready, stable, and satisfied.

Although the Army has experimented with the BEF Model, and the Air Force was briefed about the BEF Model, as of July of 1998, they were not using it. For the Army, the task of balancing and determining deployment and personnel management issues has been delegated to installation commanders (i.e., one or two star billets). While some Air Force commands considered the Model useful, other commands did not, indicating that they believe their internal modeling efforts (at the installation level) are sufficient for analyzing deployment and personnel management data.

Because of the limited use of the Model by the Army, the Force Structure, Resources, and Assessment Directorate (J-8) of the Joint Staff did not develop the Model for Air Force, Navy, or Marines Corps use. While the Services have not completely abandoned the idea of using the Model in the future, they have postponed a decision on its use.

One advantage of using decentralized methods to analyze deployment and personnel management information (i.e., methods at the installation level for each of the

Services) is that this level of effort may, to the soldier or sailor, be perceived to be more acceptable than centralized methods (i.e., methods developed inside the Pentagon). This may be due to a perception that Pentagon officials are not as knowledgeable regarding PERSTEMPO issues as officials at the installation level.

D. CONCLUSIONS

When I travel to various commands and ask the troops about quality of life issues, they tell me they have had too much time away from their families because they were involved with missions that they do not see as a threat to the national security of the U.S.

Senator Kay Bailey Hutchison
Speech on the Senate Floor
July 30, 1998

The demands for U.S. military presence around the world are not likely to abate over the next decade. If we are to have high quality armed forces that can engage in two nearly simultaneous major theater wars and conduct numerous smaller-scale contingency operations, we must have ready, high quality personnel. In order to recruit and retain high quality personnel and maintain a high state of readiness, our leadership must better understand the supply and demand sides of military quality of life, readiness, and personnel tempo issues.

Those on the demand side need to understand that we no longer have Cold War force levels, infrastructures, and resources. If the All-Volunteer Force concept is to remain in place, civilian and military leadership needs to carefully assess the extent of

military participation in peacetime engagement activities and smaller-scale contingency operations.

Those on the supply side need to understand the efforts that are underway to better measure and manage the demands on our All-Volunteer Force. The Baseline Engagement Force Model was one of these efforts. It is a leadership tool designed to assist analysts and senior decision-makers in producing alternatives for reducing the impact of deployments on military members. It was also intended to help determine policy regarding the capabilities of the unit deployment and personnel management process. Although the BEF Model has seen limited use by the Services, the Services may recognize a need for the Model in the future. The BEF Model may prove to be a basis for building decentralized models and methods that will assist in the task of balancing and determining deployment and personnel management policies.

E. RECOMMENDATIONS FOR FURTHER RESEARCH

Civilian and military Department of Defense leaders continue to look for ways to address growing resource cutbacks and other military personnel manpower issues. Recommendations for further research would be to assess the effectiveness of different personnel management tools, policies, and issues.

One topic to research is to determine a method to better measure PERSTEMPO. Another research topic is to define the extent to which Reserve and National Guard forces can contribute to peacekeeping and smaller-scale contingency operations. An additional research topic is the Global Military Force Policy (GMFP) and its ability to identify Low

Density High Demand (LDHD) assets and the extent to which OPTEMPO can be maintained without having an adverse impact on LDHD assets. A further research topic is the Global Naval Force Presence Policy (GNFPP) and its relation to the GMFP. A final topic for further research is the Navy's Horizon concept---a proposal for rotating crews instead of ships at sea.

APPENDIX A KEY AREAS OF CONFLICT AROUND THE WORLD

Country	Conflict
Afghanistan	Civil war since 1978
Albania	Civil unrest
Algeria	Armed insurgency
Angola	Political unrest inside the government
Azerbaijan	Conflict with Armenia
Bangladesh	Ethnic tension since 1975
Bosnia-Herzegovina	Civil war since 1993
Burundi	Inter-ethnic conflict
Cambodia	First and second Prime Minister tensions
Carlow	Sporadic conflict
Chad	Unrest among the government and Codos rebel movement
China (PRC)	Regular armed clashes with security authorities by Uighur Islamists
Colombia	Guerilla activity by leftist guerillas and quasi-military units of narco groups
Comoros	Sessionist movement
Congo (Dem. Rep.)	Civil war
Cyprus	Unresolved intrastate conflict
Ecuador	Continued border tensions with Peru
Egypt	Armed insurgency
Ethiopia	Cross-border tensions with Sudan
Georgia	Unresolved secessionist war in Abkhazia region
India	Nuclear weapons testing and border tensions with Pakistan over disputed territory in Kashmir
Indonesia	Separatist movements: East Timor, Sumatra, and Irian Jaya
Iran	Sporadic armed conflict with Kurds
Iraq	Sporadic armed conflict between Government and Kurds; continued tensions with the U.S. over weapons inspections
Israel/South Lebanon	Sporadic armed conflict with Palestinian groups, various Lebanese armed factions, and Arab states
Kenya	Political unrest and ethnic conflicts
Korea	Technical state of war exists between North Korea (DPRK) and South Korea (ROK)

Liberia	Civil war since 1989
Macedonia	Sporadic ethnic conflict
Malaysia	Cross-border tension with Thailand
Moldova	Sporadic armed conflict
Morocco	Separatist movement
Mexico	Armed insurgency
Myanmar	Ongoing civil war
Nigeria	Inter-ethnic violence
Pakistan	Ethnic and political violence; nuclear tests and border tensions with India over disputed territory in Kashmir
Palestinian National Authority (PNA)	Sporadic armed internal conflict between the PNA and opposition groups
Papua New Guinea	Separatist movement
Peru	Maoist guerilla activity; border tensions with Ecuador
Philippines	24-year separatist war
Russia	Chechnya, armed separatist movement; armed conflict between the Ossetian and Ingush in North Ossetia
Rwanda	Police action after civil war
Sierra Leone	Continuing unrest following overthrow of civilian Government president
Somalia	Clan warfare has left Somalia without a central government since 1991
Spain	Basque insurrection led by the Euzkadi ta Askasuna (ETA)
Sri Lanka	Separatist civil war between ethnic Tamils and the central Government
Sudan	Ethnic and religious civil war between the Arab Muslim north (Government) and the African Christian south
Tajikistan	Civil war involving several insurgency groups
Turkey	Kurdish guerilla activity
United Kingdom	Northern Ireland--insurrection by separatist Irish Republican Army (IRA)
Yugoslavia	Sporadic religiously-based insurgency in Sanjak; ethnic Albanian separatist actions in the province of Kosovo; unrest in Montenegro
Zambia	Domestic unrest
Zimbabwe	Army troops deployed in capital city of Harare to control rioting and unrest

Source: Defense and Foreign Affairs Group. Defense and Foreign Affairs Strategic Policy, February-March 1998, pp. 5-7.

APPENDIX B TECHNICAL ASPECTS OF BASELINE ENGAGEMENT FORCE MODEL

The Baseline Engagement Force Model application requires a minimum computer processor speed of 200 MHz, with a minimum ram of 32MB. A computer running at 266 MHz with 128 MB of ram is recommended.

All data is maintained on the local hard drive. Twelve MB of disk space is required for installation of the Baseline Engagement Force Model application. Models where up to 99 months of data were analyzed required an additional 120 - 200 MB of disk space (RAND, 1998).

A typical time required to analyze 8 years of data for one military occupational specialty is about 45 minutes. The output from such an analysis would yield about 140 MB of data (RAND, 1998). The data can then be used to make graphs or charts that "depict turbulence, personnel shortages, and tour curtailment averages over time at the heater, installation, and unit level" (RAND, 1998, p. iv).

The Baseline Engagement Force Model is year 2000 compliant and is coded in 32 bit C++, an object oriented software. Programmers used Microsoft Visual C++, version 4, with additional functionality in the Model being derived from using the following additional Commercial Off The Shelf software: 1) C-Tree Plus, version 6.6, by FairCom, used for database management; 2) Tab Pro, version 2, by Far Point, used for main screen tab control; 3) Spread, version 2.5, by Far Point, used for the spreadsheet view; and 4) Chart FX, version 3.0, by Software FX, used for the chart view (McGarrahan, 1998).

LIST OF ABBREVIATIONS

BEF	Baseline Engagement Force
CINC	Commander In Chief
CJCS	Chairman of the Joint Chiefs of Staff
DoD	Department of Defense
GAO	General Accounting Office
GMFP	Global Military Force Policy
GNFPP	Global Naval Force Presence Policy
LDHD	Low Density High Demand
LRC	Lesser Regional Contingency
MRC	Major Regional Contingency
MTW	Major Theater War
OPTEMPO	Operating Tempo
PERSTEMPO	Personnel Tempo
QDR	Quadrennial Defense Review
SSC	Smaller-scale Contingency
SORTS	Status of Resources and Training System

LIST OF REFERENCES

- Barnes, F. H. (1997, November / December). QDR and the likely impact on us defenses. Defense and Foreign Affairs: Strategic Policy, 16-17.
- Builder, Carl. (1989). Masks of war. A RAND Corporation research study. Baltimore: The John Hopkins University Press.
- Commager, H. S., & Cantor, M. (Eds.). (1988). Documents of American history. Englewood Cliffs, NJ: Prentice-Hall.
- Defense and Foreign Affairs Group. (1998, February-March). The conflict index. Defense and Foreign Affairs Strategic Policy. pp. 5-7.
- The Defense Monitor. (1998, February). The world at war. The Defense Monitor, 27, 1-7.
- Dorsey, J. (1998, January 15). 2 carriers in gulf may disrupt navy's deployment schedule. The Virginian Pilot, p. A6.
- Gingrich, N. (1998, February 9). Defense matters. National Review, 44.
- Graham, B. (1998, February 5). U.S. military feels strain of buildup: Gaps are showing in other theaters. The Washington Post, p. A6.
- Hillen, J. (1998). Hollow to the corps. National Review, 2, 36-40.
- Jones, A. (Ed.). (1997). Chambers dictionary of quotations. Great Britain: Cambridge University Press.
- Karl, J. (June 1997). "Teens find easy pickings for summer jobs" Online.
Available at <http://cnn.com/US/9706/06/summer.jobs/index.html>

King, J., & McIntyre, J., & The Associated Press, & Reuters. (July 1998). "U.S.: Iranian missile test missed target" Online. Available at
<http://cnncom/WORLD/meast/9807/23/iran.missile.test.02>

Lynn-Jones, S. M., & Miller, S. E. (Eds.). (1994). The cold war and after: Prospects for peace. Cambridge, MA: The MIT Press.

McGarrahan, J. R. (Senior Staff Operations Research Analyst for SETA Corporation). (1998, June). "Overview of resources associated with BEF." Personal email to author.

Newman, R. J. (1998, January 19). Can peacekeepers make war? U.S. News and World Report, 124, 38-44.

Johnson, J. L. (1997, November). Proceedings, 8.

Jones, A. (Ed.). (1997). Chambers dictionary of quotations. Great Britain: Cambridge University Press.

Owens, W. A. (1995). High seas: The naval passage to an uncharted world. Annapolis, MD: Naval Institute Press.

Polmar, N. (1988). Guide to the Soviet navy. Annapolis, MD: Naval Institute Press.

QDR and the likely impact on u.s. defenses. (1997, November / December). Defense and Foreign Affairs: Strategic Policy, 16-17.

RAND Study Group. (1998). Using Statistical Process Control To Measure Personnel System Outcomes For The Baseline Engagement Force Model. Washington, D.C.: RAND.

Roos, J. G. (1998, March). Peacekeeping's toll: High personnel tempo eroding readiness on several fronts. Armed Forces Journal, p. 18.

Ryan, (1997, September 18). Anticipated Air Force Chief, says service remains "ready". Inside the Pentagon, p. 2.

Test plan for the baseline engagement force (bef-m2) model. (1998). Information Technology Services and Systems. Pentagon, Washington, D.C.

U.S. Congress, House of Representatives, Office of the Law Revision Counsel. (1997). United States Code (1994 ed.). Washington, D.C.: U.S. Government Printing Office.

U.S. Congress, House (1998, February 12). "Open hearing on threats to U.S. national security interests". Press Release. Online. Available at <http://www.house.gov/nsc/press.htm>

U.S. Congress, House (1998, March 5). "Open hearing with regional commanders-in-chief". Press Release. Online. Available at <http://www.house.gov/nsc/press.htm>

U.S. Congress, House (1998, March 12). "Open statement of chairman Floyd D. Spence service chiefs hearing". Press Release. Online. Available at <http://www.house.gov/nsc/press.htm>

U.S. Congress, House (1998, May 21). "House endorses defense authorization bill". Press Release. Online. Available at <http://www.house.gov/nsc/press.htm>

U.S. Congress, House (FY 1999). H.R. 3616 House Committee Report 105-532 on the National Defense Authorization Act. Online. Available at <http://www.house.gov/nsc/bnr105.htm>

U.S. Congress, Senate (FY 1999). Committee overview and recommendations on the National Defense Authorization Act. Online.

Available at <http://thomas.loc.gov/cgi-bin/cpquery/1?cp105:/temp/~cp105sWty:e1>:

U.S. Congress, Senate (1998, June 26). Letter to the U.S. President from Senate Majority Leader Trent Lott.

U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff. (1994). The dictionary of military and associated terms. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff. (1997). National military strategy. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff. (1998). US armed forces as an instrument of global engagement. Paper from the Chairman to the Council of American Ambassadors, Washington, D.C.

U.S. Department of Defense, Office of the Chairman of the Joint Chiefs of Staff, Force Structure, Resources, and Assessment Directorate (J-8). (1997). [Baseline Engagement Force Assessment]. Unpublished raw data.

U.S. Department of Defense, Office of the Secretary of Defense. (1997). Report of the quadrennial defense review. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Defense, Office of the Secretary of Defense. (1996). Annual report to the president and the congress. Washington, D.C.: U.S. Government Printing Office.

U.S. Department of Defense, Office of the Secretary of Defense. (1998). Annual report to the president and the congress. Washington, D.C.: U.S. Government Printing Office.

U.S. General Accounting Office. (1996). Military readiness: A clear policy is needed to guide management of frequently deployed units. (GAO/NSIAD-96-105)

U.S. President. (1997). A national security strategy for a new century. Washington, D.C.: U.S. Government Printing Office.

U.S. President. (1998). "The president's 1998 state of the union address." Online. Available at <http://www.whitehouse.gov/WH/SOTU98/address.htm>

Weible, J. (1998, January 19). Pentagon to measure deployment tempo: Defense officials say it's long overdue for the Army and Air Force. Army Times. p. 4.

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